

*Fresno State College Bulletin*



*General Catalog*

1968 - 1969

FRESNO, CALIFORNIA

The California State Colleges

# FRESNO STATE COLLEGE

## *Bulletin*



# GENERAL CATALOG

VOL XXII      May 1968      No 3

*Published four times annually: in January, March, May and September, by Fresno State College, Shaw and Cedar Avenues, Fresno, California 93726.*

*Second-class postage paid at Fresno, California.*

**Price: One dollar**

**FALL AND SPRING**

**1968-1969**

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# COLLEGE CALENDAR, 1968-1969

## SUMMER SESSIONS 1968

Bakersfield.....	June 17-July 26, incl
Fresno.....	June 17-July 26, incl
Fresno Post-Session.....	July 29-Aug 30, incl

## FALL SEMESTER 1968

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

Aug	5	Mon	Deadline for application by any student seeking admission or readmission. Applies to all persons not enrolled in campus classes Spring 1968.	
Sept	2	Mon	Holiday—Labor Day.	
	9	Mon	Academic year 1968-69 begins.	
	9	Mon	Academic Assembly meeting, 10 a.m.	
	9	Mon	Meeting for all new undergraduate students. Men's Gym.	
	10-11	Tues-Wed	Orientation and advising for new students.	
	12-13	Thurs-Fri	Registration (See <i>Schedule of Courses</i> ).	
	16	Mon	Instruction begins.	
	16	Mon	Late registration begins (\$5 fine).	
Oct	27	Fri	Last day for late registration.	
	27	Fri	Last day to file applications for degrees and credentials to be granted January 1969 without fine. Last day to file with fine December 6.	
	3	Thurs	File application for spring semester 1969 student teaching: elementary, 3 p.m.; secondary, 5 p.m. (One day only.)	
	25	Fri	Last day to drop a course without a fine.	
	Nov	8	Fri	Mid-term grade reports due from faculty.
		28-29	Thurs-Fri	Thanksgiving recess.
	Dec	13	Fri	Last day to drop a course without INC or F grade.
		23	Mon	Christmas recess begins.
Jan	6	Mon	Classes resume.	
	13-23	Mon-Thurs	Semester examinations and reading period.	
	20	Mon	Last day to file with Office of School of Graduate Studies completed and approved theses for master's degrees to be granted January 1969.	
	24	Fri	Fall semester ends.	

JUNE 1968							JULY 1968							AUG 1968							SEPT 1968							
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	1	2	3	4	5	6							1	2	3	1	2	3	4	5	6	7
2	3	4	5	6	7	8	7	8	9	10	11	12	13	4	5	6	7	8	9	10	8	9	10	11	12	13	14	
9	10	11	12	13	14	15	14	15	16	17	18	19	20	11	12	13	14	15	16	17	15	16	17	18	19	20	21	
16	17	18	19	20	21	22	21	22	23	24	25	26	27	18	19	20	21	22	23	24	22	23	24	25	26	27	28	
23	24	25	26	27	28	29	28	29	30	31	25	26	27	28	29	30	31	29	30									
30																												

  

OCT 1968							NOV 1968							DEC 1968							JAN 1969										
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							1	2	1	2	3	4	5	6	7							1	2	3	4
6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14	5	6	7	8	9	10	11				
13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21	12	13	14	15	16	17	18				
20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28	19	20	21	22	23	24	25				
27	28	29	30	31	24	25	26	27	28	29	30	29	30	31	26	27	28	29	30	31											

**SPRING SEMESTER 1969**

Jan	6	Mon	Deadline for application by any student seeking admission or readmission. Applies to all persons not enrolled in campus classes fall 1968.
	29	Wed	Spring semester begins.
	29	Wed	Meeting for all new undergraduate students.
	30-31	Thurs-Fri	Registration (See <i>Schedule of Courses</i> ).
Feb	3	Mon	Instruction begins.
	3	Mon	Late registration begins (\$5 fine).
	14	Fri	Last day for late registration.
	14	Fri	Last day to file applications for degrees and credentials to be granted June 1969 without fine. Last day to file with fine April 25.
	20	Thurs	File applications for fall semester 1969 student teaching: elementary, 3 p.m.; secondary, 5 p.m. (One day only).
Mar	14	Fri	Last day to drop a course without fine.
	28	Fri	Mid-term grade reports due from faculty.
	31-Apr 4	Mon-Fri	Easter recess.
	7	Mon	Classes resume.
	25	Fri	Last day to drop a course without INC or F Grade.
May	30	Fri	Holiday—Memorial Day.
28-June	4	Wed-Wed	Semester examinations.
	2	Mon	Last day to file with Office of School of Graduate Studies completed and approved thesis for master's degrees to be granted June 1969.
	4	Wed	Fifty-eighth Annual Commencement.
	6	Fri	Academic year 1968-69 ends.

**SUMMER SESSIONS 1969 (Tentative Dates)**

First Session ..... June 16-July 25, incl  
 Second Session ..... July 28-Aug 29, incl

**FALL SEMESTER 1969 (Tentative Dates)**

Sept	8	Mon	Academic Assembly meeting.
	11-12	Thurs-Fri	Registration.
	15	Mon	Instruction begins.

FEB 1969							MAR 1969							APRIL 1969							MAY 1969							
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							1			1	2	3	4	5							1	2	3
2	3	4	5	6	7	8	2	3	4	5	6	7	8	6	7	8	9	10	11	12	4	5	6	7	8	9	10	
9	10	11	12	13	14	15	9	10	11	12	13	14	15	13	14	15	16	17	18	19	11	12	13	14	15	16	17	
16	17	18	19	20	21	22	16	17	18	19	20	21	22	20	21	22	23	24	25	26	18	19	20	21	22	23	24	
23	24	25	26	27	28	23	24	25	26	27	28	29	27	28	29	30	25	26	27	28	29	30	31					
							30	31																				

JUNE 1969							JULY 1969							AUG 1969							SEPT 1969							
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	7			1	2	3	4	5						1	2						1	2	3
8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9	7	8	9	10	11	12	13	
15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16	14	15	16	17	18	19	20	
22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23	21	22	23	24	25	26	27	
29	30	27	28	29	30	31							24	25	26	27	28	29	30	28	29	30						
													31															



# 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*
- Robert H. Finch, B.A., LL.B. .... State Capitol, Sacramento 95814  
*Lieutenant Governor of California*
- Max Rafferty, A.B., M.A., Ed.D. .... 721 Capitol Mall, Sacramento 95814  
*State Superintendent of Public Instruction*
- Jesse M. Unruh, 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*

## APPOINTED TRUSTEES

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.

- Louis H. Heilbron, A.B., LL.B., LL.D. (1969)  
14 Montgomery St., San Francisco 94104
- Charles Luckman, LL.D., A.F.D. (1974)  
9220 Sunset Blvd., Los Angeles 90046
- Paul Spencer, B.A. (1969)  
1323 La Terracita Drive, San Dimas 91773
- Theodore Meriam, A.B. (1971)  
P.O. Box 370, Chico 95927
- Albert J. Ruffo, LL.B., B.S. in E.E. (1971)  
600 Bank of America Building, San Jose 95113
- 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 St., Long Beach 90801
- George D. Hart, A.B. (1975)  
111 Sutter St., San Francisco 94104
- James F. Thacher, B.A., LL.B. (1970)  
310 Sansome St., San Francisco 94104
- Alec L. Cory, B.A., LL.B. (1973)  
1900 First National Bank Building, San Diego 92101
- William A. Norris, B.A., LL.B. (1972)  
609 South Grand Ave., Los Angeles 90017
- Edward O. Lee, B.A. (1974)  
1100 67th St., Oakland 94608
- Earle M. Jorgensen (1970)  
10650 South Alameda, Los Angeles 90054
- Dudley Swim, A.B., M.A. (1976)  
P.O. Box 1590, Monterey 93940
- Karl L. Wentz, M.S. (1976)  
5565 Tesla Road, Livermore 94550

## OFFICERS OF THE TRUSTEES

- |                        |                           |
|------------------------|---------------------------|
| Governor Ronald Reagan | Vacant                    |
| President              | Vice Chairman             |
| Theodore Meriam        | Chancellor Glenn S. Dumke |
| Chairman               | Secretary-Treasurer       |

OFFICE OF THE CHANCELLOR OF THE  
CALIFORNIA STATE COLLEGES

5670 Wilshire Boulevard, Los Angeles, California 90036

Area Code: 213 Phone: 938-2981

Chancellor ..... Glenn S. Dumke  
Executive Vice Chancellor ..... Raymond A. Rydell  
Vice Chancellor, Academic Affairs ..... Russell G. Whitesel  
Vice Chancellor, Business Affairs ..... Harry E. Brakebill  
Assistant Chancellor, Faculty and Staff Affairs ..... C. Mansel Keene

THE CALIFORNIA STATE COLLEGES

California State College, Dominguez Hills

809 East Victoria Street, Dominguez Hills, California 90247

Leo F. Cain, President

213 532-4300

California State College at Fullerton

800 North State College Boulevard, Fullerton, California 92631

William B. Langsdorf, President

714 871-3300

California State College at Hayward

25800 Hillary Street, Hayward, California 94542

Ellis E. McCune, Interim President

415 538-8000

California State College at Long Beach

6101 East Seventh Street, Long Beach, California 90804

Carl W. McIntosh, President

213 433-0951

California State College at Los Angeles

5151 State College Drive, Los Angeles, California 90032

John A. Greenlee, President

213 224-2011

California State College at 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

916 343-4411

**Fresno State College**

Shaw and Cedar Avenues, Fresno, California 93726  
Frederic W. Ness, President  
209 487-9011

**Humboldt State College**

Arcata, California 95521  
Cornelius H. Siemens, President  
707 822-1771

**Sacramento State College**

6000 Jay Street, Sacramento, California 95819  
Robert Johns, 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  
Ralph Prator, President  
213 349-1200

**San Francisco State College**

1600 Holloway Avenue, San Francisco, California 94132  
John Summerskill, Acting President  
415 469-9123

**San Jose State College**

125 South Seventh Street, San Jose, California 95114  
Robert D. Clark, President  
408 294-6414

**Sonoma State College**

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

**Stanislaus State College**

800 Monte Vista Avenue, Turlock, California 95380  
Alexander Capurso, President  
209 634-9101

**California State College in Kern County**

615 California Avenue, Bakersfield, California 93304  
Paul F. Romberg, President  
805 327-9101

## THE CALIFORNIA STATE COLLEGES

The California State Colleges are a unique development of the democratic concept of tax-supported public higher education for all qualified students.

Spanning the state from Humboldt County in the north to San Diego in the south, the 18 campuses of the California State Colleges (with another campus soon to be constructed) represent the largest system of public higher education in the Western Hemisphere, and one of the largest in the world. Current enrollment exceeds 188,000 full- and part-time students. The faculty and administrative staff number approximately 10,000.

The individual colleges, each with a geographic, curricular and academic character of its own, offer a solid basic program in the liberal arts. Beyond this, each college is noted for its individuality in academic emphasis which makes for a diversified system. Course offerings leading to the bachelor's and master's degrees are designed to satisfy existing student interests and to serve the technical and professional manpower requirements of the state.

The California State Colleges are dedicated to rigorous academic standards. Constant striving for academic excellence is at the heart of the system. The primary responsibility of each faculty within the system is the instructional process on the teacher-student level, with appropriate recognition of the necessary and constructive role of research in any institution of higher education.

Responsibility for the California State Colleges is vested in the Board of Trustees, which is appointed by the Governor, and the Board's administrative arm, the Chancellor. The Trustees and the Chancellor set broad policy for the colleges while delegating considerable independent responsibility for implementation at the college level. A statewide Academic Senate, made up of representatives elected by the faculty at each college, acts as a consultative body to the Chancellor in the area of academic affairs.

Although the oldest of the colleges, San Jose State College, dates back a century, the California State College system under an independent Board of Trustees was created by the Donahoe Act of 1960. Formerly, the colleges were under the jurisdiction of the State Board of Education.

Today, the California State Colleges are in a particularly 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, eleven new colleges have been developed; and sites have been selected for new colleges in Kern, Ventura, San Mateo, and Contra Costa Counties. Enrollment in the system is expected to reach 225,000 by 1970.

### 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.

Joseph H. Dale, Jr.

Lewis S. Eaton

Lowell W. Firstenberger

Mrs. Dale Hillman

Mrs. Virginia J. Knowles

James B. Mayer

Ray M. Miles

Leon S. Peters, Chairman

George E. Ross

Harold V. Thompson

Joseph R. Weirick

Melville E. Willson

Richard M. Worrel

Frederic W. Ness, 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 Manager for Association Activities.....Earl Whitfield

## COLLEGE ADMINISTRATION, 1967-68

### EXECUTIVE

President	Frederic W. Ness
Assistant to the President	Lucile Allen
Assistant to the President	<del>Wallace D. Henderson</del>
Business Manager	Carl Levin
Director of Community Relations	Harold E. Green
Director of Planning and Development	Leonard H. Hildebrandt
Director of Related Educational Activities	Earle L. Bassett
Assistant Manager for Association Activities	Earl Whitfield
Executive Vice President	Harold E. Walker
Executive Dean	Kenneth H. Beesley
Administrative Assistant (Building Coordinator)	William R. Myers
Director of Institutional Studies	
Director of Computer Center	James H. Pinkoski
Administrative Assistant (Institutional Studies)	Rose Shamlin
Dean of Students	W. Donald Albright
Director of Athletics	Cecil N. Coleman
Director of Instructional Media Center	Leonard H. Bathurst, Jr.
Research Coordinator	Thomas I. Gunn

### ACADEMIC

Academic Vice President	<del>Dallas A. Tueller</del>
Coordinator of Television	John P. Highlander
Coordinator of Honors Program	
Associate Vice President for Academic Planning	<del>M. Bruce Fisher</del>
Assistant Academic Vice President	Robert L. Shacklett
Coordinator of Academic Administration	Paul J. McGuire
College Librarian	Henry M. Madden
Dean of Educational Services and Summer Sessions	Edward M. Spencer
Director of Bakersfield Center	Leo P. Varner
Director of Extension Program	Arne J. Nixon
Dean of the School of Graduate Studies	Phyllis W. Watts
Coordinator of Graduate Studies	Georgia E. Nicklett
Dean of the School of Agriculture	<del>Lloyd Dowler</del>
Assistant Dean (Acting)	Robert J. Glim
Dean of the School of Arts and Sciences	Dale C. Burtner
Assistant Dean	A. Wayne Colver
Assistant Dean	<del>James H. Winter</del>
Dean of the School of Business	<del>McKee Fisk</del>
Assistant Dean	Robert E. Hampton
Dean of the School of Education and Director of Teacher Education	Richard K. Sparks
Dean of the School of Engineering	Thomas H. Evans
Dean of the School of Professional Studies	Horace O. Schorling
Dean of the School of Social Work	Thomas M. Brigham
Associate Dean	Barbara K. Varley

### STUDENT PERSONNEL SERVICES

Dean of Students	W. Donald Albright
Assistant Dean of Students	Kenneth M. Kerr
Associate Dean of Students (Activities—Housing)	<del>Gordon Wilson</del>
Activities Adviser	Susan D. Howard
Housing Coordinator	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 Counseling and Testing and	
Coordinator of Faculty Advising	Deryle K. Allen
Counselor	Kenneth E. Blood
Counselor	Charles R. Brasfield
Counselor	Viola A. Davis
Counselor	Evelyn H. Wright
Psychometrist	Beverly J. Aldrich
Test Officer and Counselor	Charles L. Wheeler
Director of Financial Aids	Kenneth E. Lewis
Assistant Director of Financial Aids	Ray E. Brewer
Coordinator of Foreign Student Program	Robert G. Knudsen
Director of Health Services	Marvyn S. Schwartz, M.D.
Physician	Donn R. Cobb, M.D.
Physician	Rae Jean Joseph, M.D.
Psychiatrist	Leo J. Broderick, M.D.
Supervising Nurse	Anna Edwards
Director of Placement	Harold D. Jones
Placement Supervisors	Gladys Ekizian, Vivienne Jordan

#### BUSINESS MANAGEMENT

Business Manager	Carl Levin
Administrative Assistant	Henry Roberts
Accounting Officer	George T. Weybright
Chief of Security	Douglas F. Bambridge
Purchasing Officer	Ralph D. Koerber
Personnel Officer	William M. Coughran
Housing Manager	Lavon C. Erickson
Superintendent of Buildings and Grounds	Ashton H. Shields

## SCHOOL DEANS AND DEPARTMENT CHAIRMEN, 1967-1968

School of Agriculture.....	Lloyd Dowler
Agricultural Mechanics Department.....	Clarence D. Jensen
Animal Science Department.....	Jesse T. Bell
Plant Science Department.....	Wayne E. Biehler
School of Arts and Sciences.....	Dale C. Burtner
Anthropology-Sociology Department.....	William C. Beatty, Jr.
Art Department.....	Frank B. Laury
Biology Department.....	Keith H. Woodwick
Chemistry Department.....	Richard P. Ciula
Economics Department.....	Robert A. Minick, Jr.
English Department.....	Robert S. Billings
Foreign Language Department.....	Edgar A. List
Geography Department.....	Chester F. Cole
Geology Department.....	C. Noble Beard
History Department.....	Jose C. Canales
Linguistics Department.....	Frederick H. Bregelman
Mathematics Department.....	Thomas C. Kipps
Music Department.....	Ralph C. Rea
Philosophy Department.....	Jack A. Pitt
Physical Education and Recreation Department.....	Cecil N. Coleman
Physics Department.....	Frederic A. Scott
Political Science Department.....	Karl E. Buckman
Psychology Department.....	Stanley E. Lindquist
Speech Arts Department.....	Phillip N. Walker
School of Business.....	McKee Fisk
Accounting and Quantitative Studies Department.....	Clayton R. Tidyman
Finance and Industry Department.....	Robert A. Carr
Management and Marketing Department (Acting).....	John H. Kruger
Office Administration Department.....	Helen F. Rohrer
School of Education.....	Richard K. Sparks
Advanced Studies Department.....	Orley W. Wilcox
Elementary Education Department.....	Glenn F. Leslie
Secondary Education Department.....	Edwin J. Swineford
School of Engineering.....	Thomas H. Evans
School of Professional Studies.....	Horace O. Schorling
Aerospace Studies Department.....	Karl R. Baumwell
Criminology Department.....	Frank M. Boolsen
Health Science Department.....	Henry F. Fricker
Home Economics Department.....	Ratana S. Newsome
Industrial Arts and Technology Department.....	Frank E. Schroeter
Journalism Department.....	Paul V. Sheehan
Nursing Department.....	Fannie L. Gardner
School of Social Work.....	Thomas M. Brigham

### LIBRARY

College Librarian.....	Henry M. Madden
Librarian IV.....	Lillie A. Parker, Virginia C. West
Librarian III.....	Sara C. Berry, Stephanie Hillman, Erland L. Jacobsen, Gary B. Kellogg, Elizabeth A. Landrum, Larry T. Welch, J Printise Womack
Librarian II.....	Nazaly Bagdasian, Sandra Cowling, Donald G. Davis, Jr., Arthur G. Gothe, Susanne A. Haffner, Ronald J. Harlan, Ann Hopping, Charlotte M. Lowery, Eugene Mescherin, Pauline Micciche, Edith M. Quibell, Grace T. Waibel
Librarian I.....	Bertina Richter



College Union



FRESNO STATE COLLEGE  
Memorial Court and Thomas  
Administration Building

# FRESNO STATE COLLEGE

## GENERAL INFORMATION

### FUNCTIONS

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

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

### HISTORY

Fresno State College was established in 1911, as the Fresno State Normal School. Its function was the training of teachers for elementary schools. Under the administration of its first president, Charles L. McLane (1911-1927), a campus was built at the northern edge of Fresno; the future college assumed its modest role in the educational life of California.

In 1921 the State Board of Education expanded the courses of study to four years, and the college was empowered to grant the bachelor's degree. Simultaneously, the name of the institution was changed to Fresno State Teachers College. During the decade following the inauguration of the college's second president, Frank W. Thomas (1927-1948), the diversification and growth of the college were recognized by the change of its name in 1935 to Fresno State College. It was empowered to grant bachelor's degrees in the usual liberal arts and preprofessional subjects, either with or without courses required for teaching credentials.

The expansion of higher education in the years following World War II was evident at Fresno State College in the rapid growth of enrollment and in the introduction of graduate studies. These events bridged the administrations of President Thomas and his successor, Arnold E. Joyal (1948-1964). In 1946 a fifth year of studies leading to the general secondary credential was authorized, followed in 1949 by the bestowing of the master of arts degree.

During the years 1953-1958 the college was moved from its first campus, long since surrounded by the city, to a site of 1410 acres, six miles to the northeast. Although the handsome buildings of the old campus were given up with sentimental regret, the wisdom of the building of a new campus was quickly evident. 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 achieved by the establishment, during the years 1965 to 1968, of seven schools and the School of Graduate Studies.

## NATIONAL RATING AND ACCREDITING

The college is accredited by the California State Board of Education and the Western Association of Schools and Colleges, and is a member of the Western Association of Graduate Schools and the Council of Graduate Schools in the United States. It is a member of the American Association of Colleges for Teacher Education and is accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary teachers, secondary teachers, and school service personnel, with the master's degree as the highest degree authorized; accreditation for the school service personnel category is limited to elementary principals and supervisors, secondary principals and supervisors, and guidance workers. The School of Business is a member of the American Association of Collegiate Schools of Business. The Chemistry Department is approved by the American Chemical Society. The Nursing Department is accredited by the National League for Nursing and the California State Board of Nursing Education and Nurse Registration. The Journalism Department is accredited by the American Council on Education for Journalism; its news editorial sequence is specifically accredited by the Council. The School of Engineering is accredited by the Engineers' Council for Professional Development. The Division of Social Work holds both undergraduate and graduate membership in the Council on Social Work Education and its two-year professional Master of Social Work program is accredited by the Council.

## BUILDINGS AND FACILITIES

Fresno State College is located on a 1410-acre site at Cedar and Shaw Avenues in the northeast section of the City of Fresno. The major buildings on the campus are administration, agricultural classroom, agricultural mechanics, art-home economics, bookstore, business, cafeteria, education-psychology, engineering, home management cottage, industrial arts, laboratory school, library, men's gymnasium, music, science, social science, speech arts, student health service, and women's gymnasium. A large amphitheatre is located between the speech arts and music buildings to accommodate commencements, convocations, and other large assemblages. ~~Three residence halls are located on the campus.~~ Frank A. Homan Hall houses 208 men; Mary Baker Hall and George West Graves Hall house 416 women. ~~It is expected that six additional residence halls and a new College Union will be available for occupancy at the beginning of the current academic year.~~ Plans call for the construction of other new buildings and additions to existing buildings to meet the enrollment increases anticipated during the next several years.

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

The College Farm consists of 1190 acres and 34 farm buildings which together with livestock and equipment provide one of the most modern and best equipped agricultural plants in the west.

Located in the vicinity of the former campus approximately five miles from the Shaw Avenue Campus are Ratcliffe Stadium, on Blackstone and University Avenues, and the University Avenue Extension Center, at Van Ness and University Avenues.

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

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## LIBRARY

The College Library is housed in a building completed in 1965. Its resources include 235,000 catalogued volumes, 131,000 government publications, 33,000 pamphlets, 30,000 maps, and 20,000 pictures and prints. Over 2,300 periodicals are received on subscription. Special collections include the Roy J. Woodward Memorial Library of California and the College Archives. A collection of 7,700 volumes in the College Laboratory School Library provides a model library for an elementary school. The Music Library has over 10,000 phonodiscs and tapes. The library building accommodates 1,375 readers. All students have free access to the resources of the Library. Professional librarians are available to assist students in their use of library materials. The Library is open seventy-seven hours a week, during hours posted at the entrance to the building.

1. ~~Make separate page~~

6. A list of the Presidents

Separate Page

Presidents of Fresno State  
College.

1911-1927 Charles L. Mc Lane Deques

1927-1948 Frank W. Thomas

1948-1964 Arnold E. Joyal

1964-~~6~~ Fredric W. New, B.A.; M.A.; Ph.D.

+ add student to ~~the~~ Union  
Administration of Student Services

## 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.....	\$43.00
Association fee and health service fee, per semester (not a state fee).....	12.00
College Union fee (not a state fee).....	9.00
Total, per semester (California resident).....	\$64.00

**For each student enrolled for 6 units or less:**

Materials and service fee, per semester.....	22.00
Association fee, per semester (not a state fee).....	5.00
College Union fee (not a state fee).....	4.50

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

Each nonresident student enrolled for 15 units or more.....	360.00
Each nonresident student enrolled for less than 15 units, per unit or fraction.....	24.00
Each foreign visa student enrolled for 15 units or more.....	127.50
Each foreign visa student enrolled for less than 15 units, per unit or fraction.....	8.50

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

**Extension, per unit:**

Lecture or discussion course.....	16.50
Activity course.....	21.50
Science laboratory course.....	33.00
Summer session courses, per unit.....	21.00

**Other Fees:**

Application for admission fee (nonrefundable).....	\$10.00
Diploma fee (not a state fee).....	3.25
Transcript of record (no charge for first copy).....	1.00
Thesis binding fee, 4 copies (not a state fee).....	16.50
Additional copies, per copy.....	4.25
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 6.00

**Credential fee (collected for State Department of Education, \$15 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.....	\$520-610
(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 because of compulsory military service, at any time prior to the date when the student receives any academic credit for any course or courses for which he is registered. The *late registration fee* is not refundable. If a student reduces his units to fall within a lower fee category within the first two instructional weeks of the session, makes a formal change of program through the Student Records Office, and files a written application for refund within this time limit, the differential may be refunded except for the cost of materials and services used, plus \$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, and the College Union fee* is set annually. Refunds are dependent upon the length of time between the opening of the semester and application for refund. Application must be made and student body card turned in to the Association Office.

The *extension tuition fee*, less \$5.00, may be refunded upon formal withdrawal and the filing of written application on the official form provided by the Extension Office prior to the fourth meeting of the class.

A partial refund of the *summer session fee* may be made, if applications for withdrawal from classes and return of fees are filed within required time limits. See the *Summer Session Bulletin*.

# 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* as amended by the Board of Trustees of the California State Colleges on January 21, 1965 and June 4, 1966. 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.

### 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 in the last three years, excluding any courses taken 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 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. Such applicants are not required to take the SAT.

#### **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 Programs**

*Technical Agriculture:* High school graduates may be admitted to the technical agriculture program in accordance with provisions listed in the School of Agriculture.

*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 he 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 the college, succeed in that degree objective.

**Other Applicants**

Only under the most unusual circumstances will an applicant not meeting either of the above provisions be considered for admission. Permission is granted by special college action.

**ADMISSION TO GRADUATE STUDY**

(See *School of Graduate Studies*)

**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 a bachelor's degree or higher 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 without credit. Auditors must register in the usual way and pay the same fees as would

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

#### ADMISSION PROCEDURE

Applications for the fall semester are accepted beginning December 1 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 \$10 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 copy of the results sent to the college Admissions Office.
4. Take any additional entrance examinations required.
5. Veterans must, in addition, file with the Admissions Office a copy of Notice of Separation from military service.

Application for admission must be filed by the deadlines published in the College Calendar; these are 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 legal documents are also 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 in order to ensure consideration.

#### GENERAL INFORMATION

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

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

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

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

#### ENTRANCE EXAMINATIONS

All but two categories of entering undergraduate students are required to submit scores on the College Entrance Examination Board Scholastic Aptitude Test (SAT). The two excepted categories include (1) foreign students from non-English speaking countries and (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.

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 \$5.00 registration fee

which must be sent to the Education Testing Service. Also, students may obtain information by writing to the College Entrance Examination Board at Box 1025, Berkeley, California, if they live in the western states; 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.

**Reading Examination:** Because success in college is dependent upon efficiency in reading, accurate information about a student's degree of reading skill is essential to intelligent planning of his program. To provide this information, Fresno State College requires all entering undergraduate students to take a reading test. Students must file reservations for this test on forms provided by the Admissions Office. Students whose scores on this test are low should enroll in English 6.

**English Examination:** Entering undergraduate students must take an objective examination which measures competence in spelling, grammar, diction, sentence structure, and punctuation. Students must file reservations for this examination on forms provided by the Admissions Office. Following the examination students will be notified of test results and eligibility for English courses. Transfer students who have completed freshman English or who have satisfactorily completed a course in English fundamentals equivalent to English A, 1, or the former English 3 at another collegiate institution are excused from the examination.

**English Proficiency Test for Foreign Students:** The college requires that all 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 transfers from American colleges whose grades demonstrate full competency in English. TOEFL is an objective examination designed to assist the college in determining whether the foreign student's comprehension of and ability to use the English language is adequate for the academic demands of 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 Speech 76. See *School of Education—Admission to Credential Programs*.

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

#### PROFICIENCY TESTS

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

**STATEMENT OF RESIDENCE**

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

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

**PROGRAM PLANNING**

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

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

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

Admission to the College	General Education
Advanced Placement	Housing
College Calendar	Pass—Withdraw
Concurrent Registration	Probation
Counseling Services	Registration
Course Requirements	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 Programs
Foreign Language	Statement of Residence
Foreign Students	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 *College Calendar*. Students seeking readmission 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 \$10 application fee for readmission. The *College 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.

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

### 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

Approval must be obtained in advance of registration from the Registrar 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 School Dean or Division Chairman to carry maximum programs. In general for undergraduates, requests to take units above the maximum will be granted on the following basis: 18 semester units may be approved if the student has a 2.5 grade-point average or above (on a 4 grade-point system); 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 for the course concerned. Upper division credit may not be granted until a student has completed a minimum of 45 semester units. Only students who have been fully approved for admission to credential programs may enroll in certain education courses and qualify for a school service credential on the basis of the college's recommendation.

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 without completion and filing of the forms provided by the Student Records Office. The change is not recorded until these forms are properly filled out and filed in the Student Records Office. No courses may be added after the second week of the semester; courses dropped after the first six weeks incur a fine of \$1.

### 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 in turn notify the

departments concerned so that advisement records may be forwarded to the new department and a new adviser may be assigned.

#### WITHDRAWAL FROM COURSES

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

#### WITHDRAWAL FROM COLLEGE

Students withdrawing from college must file written application on the 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 may be given in any course, on withdrawal from college during the last six weeks of the semester, if the work in the course is of passing quality. 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.
- FW—Withdrawal with mark F, or failure to withdraw officially.
- 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 in advance by the appropriate School Dean. 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 does 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, FW—Units counted, no grade points.
- AU—No units or grade points allowed.

The above grade point system was effective September 1, 1964. Prior to that date 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. An incomplete, when properly made up, will receive the units and grade points appropriate to the mark finally earned.

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. Reconsideration 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 given to all students both as a verification of the student's official program and as a report of any unsatisfactory progress.

### CREDIT BY EXAMINATION

Credit by examination may be earned in some cases 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*).

### 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. Credit is limited to a maximum of three units per semester. Under extraordinary circumstances more than three units of credit per semester may be allowed on petition to the department chairman.

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.

### COUNSELING

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

*Vocational Counseling.* The Counseling Office assists students in self-appraisal of their unique interests and aptitudes and in their search for a vocational goal for which they are best fitted. Psychological and vocational tests are used as needed and a library of vocational information is provided. Each academic department provides vocational advising pertinent to its field.

*Educational Counseling.* The academic advising program is coordinated and serviced through the Counseling Office. 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 academic 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 Counseling Office assists students who are failing to meet scholarship standards. Counseling and testing are designed to help students to discover weaknesses and to plan remedial measures.

*Personal Counseling.* The Counseling Office provides services for students with adjustment problems of a personal nature. Clinical psychologists are available in the Counseling Office and limited psychiatric consultation is available in the Health Services Office.

*Selective Service Counseling.* Under the Military Selective Service Act of 1967 a college student may qualify for a student deferment (II-S) by "satisfactorily pursuing a full-time course of instruction" at a college or university, completing 25% of the units required for the baccalaureate degree during each calendar year of his enrollment. For a baccalaureate degree prescribing five years of study, a student should complete 20%, each year, of the total units required. He must also file a written request with his draft board applying for a student deferment and, at the beginning of each college year, provide his board with evidence certified by the college that he is satisfactorily pursuing a full-time course of instruction (at least 12 units per semester). The college will provide the necessary certification forms at the time of registration. However, it is the student's responsibility to complete these forms and to keep his draft board informed concerning his status as a college student. For further information, consult the Student Activities Office.

## FOREIGN STUDENTS

Fresno State College regularly enrolls a significant number of students from abroad. The Coordinator of the Foreign Student Program assists foreign students in matters pertaining to visas, passports, dollar exchange, work permits, practical training, trips outside the United States, required health insurance, and housing, as well as with personal and academic problems. (See *Student Housing*)

Campus and community groups sponsor social, cultural, and educational activities which involve foreign students and are designed to enhance their educational experiences in the United States. Students should consult the Coordinator of the Foreign Student Program immediately upon arrival on the campus. (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, they must have sufficient funds so that they will not need employment during the first year at the college and should plan to take the minimum legal number of courses each semester. Undergraduate students on "F" or "J" type visas must register for 12 units or more each semester.

### Foreign Graduate Students

(See *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. Should hospitalization for a qualified student be necessary, the Student Health Service will allow \$10 per day for five days toward the cost of hospitalization which is not otherwise covered by insurance. In addition, an excellent student sickness and accident insurance policy is offered through the Health Service.

### **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 training program, and to conduct a follow-up program of candidates placed in positions.

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

#### **Educational Placement**

Membership in the Office of Placement is open (1) to anyone who holds or will receive a regular teaching credential in the semester prior to date of employment provided a minimum of 12 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 12 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 new credential law, including student teaching; and (4) to those in the internship program who complete requirements for a credential.

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

Membership in the Office of Placement 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 Office of Placement early during the year in which they expect to graduate. Close cooperation is maintained with the various divisions and departments in the placement of candidates in these fields.

#### **Student Placement**

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

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 Office of Student Placement. Employed students are expected in their work 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

During the fall semester of 1968 the College Union building will be opened to serve the campus community. This new structure has been planned by students and is being financed by student funds through the Fresno State College Association. The College Union will be an on-campus community center for students, faculty, and guests. In addition it will provide convenient and inexpensive social and recreational opportunities. The building will include conference and meeting rooms, lounge areas, a coffee shop, a barber shop, art display areas, student government and committee offices, bowling and recreation areas, the Alumni Office, and numerous service facilities for students and faculty. Most of its facilities will be available without charge to students and student organizations.

### 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 conduct themselves in a manner compatible with the educational purposes of the college, to observe college regulations and to be responsible for their personal behavior. Disciplinary action involving reprimand, probation, suspension, or expulsion may be assessed for violation of established rules or unacceptable conduct in the following areas:

- Cheating, plagiarism, or falsification of records;
- Disorderly, unethical, vicious, or immoral conduct (California Administrative Code, Title 5, Education);
- Misuse, abuse, theft, or destruction of state property (California Administrative Code, Title 5, Education);
- 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 on the campus;

Violations of college regulations and directives outlined in the *Handbook for Student Organizations*.

Suspension or expulsion will be assessed as a penalty for conduct unacceptable to the college only after the student involved has been given a formal hearing before a disciplinary board.

#### **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. Upon payment at registration of a \$10 fee for each student carrying seven units or more or a \$5 fee for each student carrying six units or fewer an association membership card is issued permitting him to participate in all of the activities of the association and admitting him to association activities either without charge or at a reduced admission fee determined by the Board of Directors of the Association. Membership cards are nontransferable. Faculty members are also entitled to association membership. The principal activities supported by the association fee are athletics, publications, music, drama, cultural programs, and the activities of the student government. The Board of Directors, composed of faculty members and students, is responsible for the budgetary control and management policy for all association operations which include the bookstore, the cafeteria, the college union program, and other association activities involving expenditures 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 *Collegian*, published daily, is the official news publication. A handbook and a directory, appearing soon after the fall semester opens, contain general information about the college and an address list of faculty and students. The college annual, the *Campus*, appears during the final month of the college year. (To obtain a copy of the *Campus*, a reservation fee must be paid at the opening of the fall semester and membership in the association must be held both semesters or one semester plus a charge of \$2.50.) 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

Included among the purposes of the Fresno State College Alumni Association are the maintenance of contact with former students, general support of the college in all its activities, specific support of special college projects and the cultivation of an enduring loyalty to the college by its graduates. Membership is open to anyone who has attended the college for one or more semesters. Annual dues are \$10 and life memberships are \$100. A percentage of all funds accruing to the Alumni Association from membership funds is made available as scholarships. Additional scholarship and loan funds are made available from other sources. The Alumni Association and college join in numerous events which involve students. Included are the orientation activities, homecoming, the senior breakfast at which the Alumni Association presents an award to the outstanding senior man, Alumni Day activities, and athletic events. Each senior automatically becomes a member of the Alumni Association for one year as part of the graduation ceremony.

### 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 \$1,400 to \$1,800. 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 \$900 to \$1220
Materials and service fee .....	86
Association fee and health service fee.....	24
College Union Fee .....	18
Books and supplies.....	100 to 150

### FACILITIES

#### FOOD SERVICE

The Fresno State College Association, Inc., maintains the college cafeteria, snack bar, residence hall dining room, staff dining room, and automatic food service in the Cafeteria Building. The residence hall dining room and automatic food services 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 has three modern residence halls in operation. In addition, the college will open a new residence hall complex in the fall of 1968. These new facilities will provide the college with on-campus living space for 1,254 students. The halls are fireproof, air-conditioned buildings having study rooms, lounges, recreation rooms, and laundry facilities. The rooms are attractively furnished, and provide adequate study and living facilities. Linen service is provided, but students are required to furnish their own blankets and towels. Food service is provided by the college cafeteria. For information on residence hall costs, see *Fees and Expenses*.

The halls now house two students per room. The new complex, a coeducational living center, will house 315 men in its south wing and 315 women in the north wing. These students will share a common lounge and recreation area. The new halls will also provide single room accommodations, double rooms, and three-bedroom suites housing six students. Each hall is under the supervision of a well qualified head resident and six student assistants. Students are encouraged to take

part in group living through experience in self-government and participation in the social and intramural programs. Students living in the halls are required to observe residence hall rules. All students assigned space in residence halls will be required to sign an agreement to live in the halls for the entire college year.

Further information and applications for reservations may be obtained by writing to the Student Housing Office. Application forms should be requested prior to March 1 and will be mailed to applicants on about March 15. Students who are applying for accommodations in the halls must also file an application for admission to the college. Conditional admissions can usually be granted on the basis of a transcript of all college or high school work completed to date. For further information on admissions see *Regulations and Procedures*.

#### **Approved Off-Campus Residence for Women**

The Student Housing Office maintains a list of approved rooming and boarding houses which have been inspected and meet the college housing standards for women. A number of apartment-type units suitable for student housing have been constructed adjacent to the campus. Many of these units provide adequate supervision and meet other college standards for approved off-campus housing for women students. Fresno State College sororities also provide approved housing for women who affiliate with these organizations. Women living in approved housing will be required to observe the residence rules of the college. Arrangements for living accommodations should be made well in advance of registration. If women secure housing not on the approved list, the parent or guardian will be asked to assume full responsibility. The college strongly recommends that all freshmen women live in residence halls, sorority houses, approved off-campus housing for women, or with adult relatives. Further information on approved housing for women may be obtained from the Student Housing Office.

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

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

To be classified as "approved" housing by the college, facilities must meet certain standards for space, furnishings, bath facilities, and supervision. They must provide adequate space for sleeping and study and a living area large enough to accommodate adequately the number of students living in the unit. These units must also have a manager-supervisor in residence and must be subject to prior inspection by the college. (The Housing Office also lists other available student housing which does not meet the standards for "approved" housing, but does meet minimum standards of cleanliness, repair, sanitary facilities, and space as required by the City and County of Fresno for rental units.)

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 Housing Authorities of the City and County of Fresno, 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 \$60 to \$150 per month depending on size and furnishings.

#### **International Living Center**

The International Living Center, adjacent to the campus, houses both foreign and American students. 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 Coordinator, 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 1968-69 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. Each applicant should present two letters of recommendation from people of recognized standing in his community who are in a position to give information about the applicant's character, ability, and financial need. The applications of new students must be accompanied by transcripts of high school and all college work completed to date. 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 Coordinator of the Foreign Student Program, students attending on *F* type 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. 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 93726. 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 93726.

### **State Guaranteed Bank Loan Program**

Under this program an undergraduate student may borrow up to \$1000 a year from a commercial lending institution with repayment guaranteed by the state; a graduate student may borrow up to \$1500 yearly. 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 half the interest during the repayment period. 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 \$800. Applications for grants may be obtained from the Financial Aids Office, Fresno State College.

### **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 \$2100 for the academic year. Some assistantships may be for less than half-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 should see also section on School of Graduate Studies.*

### EXTENSION CLASSES

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

The college allows enrollment in 6 units of extension courses per semester as a maximum for teachers employed full time. See *Program Restrictions* for statement regarding extension classes. Not more than a total of 24 units by extension and correspondence can be applied toward a bachelor's degree. Not more than 12 units of extension and correspondence courses may be transferred from another college or university. Extension work is not entered on the Fresno State College permanent record, except at the request of a matriculated student.

Not more than 6 units of the 30 units required for the master's degree may be earned in extension courses, student teaching, transfer credit or any combination of these. Candidates for the master's degree should check with the Office of the Dean, School of Graduate Studies, or departmental graduate adviser to learn whether specific extension courses may be applied on their graduate programs.

### SUMMER SESSIONS

Fresno State College conducts summer sessions on its campus in Fresno, on the Bakersfield College campus, and classes on the College of the Sequoias campus in Visalia. Special workshop sessions are held in other valley centers. The Fresno and Bakersfield six-week sessions follow the spring semester; the Fresno second session follows the Fresno and Bakersfield sessions and include classes held at Visalia, Bakersfield, and elsewhere in the valley, offering the possibility of completing a maximum of 11 weeks in a single summer. Not more than one semester unit may be earned for each week of attendance, except that upon approval of appropriate college authorities additional semester units may be earned at the rate of one-half unit for each three units for which a student is registered in a three-week period. The offerings at these sessions include a variety of courses leading to the bachelor's and master's degrees. The program includes courses to meet the requirements for elementary, secondary, administration, supervision, and special credentials and in-service professional needs in various fields. Courses of a general cultural nature in various academic departments are also offered. *A bulletin describing the offerings of all sessions is ready for distribution in March. Students who are interested in attending should write to the Dean of Educational Services and Summer Sessions, Fresno State College, Fresno, California 93726.*

### BAKERSFIELD CENTER

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

restricted to upper division courses applicable to this degree and credential. The Center offers majors in social science and in English, and minors in art and in English to candidates for the standard teaching credential with specialization in elementary teaching.

Students who plan to attend the Bakersfield Center must apply for admission to the Director of the Bakersfield Center, Fresno State College, 4021 Mt. Vernon Avenue, Bakersfield, California 93306.

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

## 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. It is, therefore, advisable for students preparing for law to arrange a four-year program leading to a bachelor's degree. Law schools recommend a prelegal program which gives a broad cultural background; any baccalaureate major may be chosen from the college offerings (see list under *Degree Majors and Minors*). The prelegal student should choose the major most interesting to him. Law schools suggest courses, but not necessarily a major, in the following: written and oral English, American and English constitutional history, world history, accounting, elementary logic, mathematics, economics, political science, philosophy, science, and foreign language. For further information consult an adviser and law school catalogs.

### PRELIBRARIANSHIP

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

### PREMEDICAL

Medical colleges vary widely in their specific requirements for admission. All medical schools require completion of three years of college (a minimum of 90 semester units) with a C average or better. A program which includes 38 semester units of natural science distributed in biology (12 units), chemistry (18), and physics (8), one year of English, including composition, and a reading knowledge

of a modern foreign language will qualify a student for most medical schools. The applicant is usually required to take the medical aptitude test and to present evidence of physical fitness and moral character. Due to competition for admission to medical schools most of the students find it necessary to complete the four-year program for the bachelor's degree and to achieve a grade average of better than C.

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

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

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

### 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.

### PRETHEOLOGICAL

Students planning to attend a theological seminary or school may satisfy the undergraduate requirements at Fresno State College. Seminaries or schools which are members of The American Association of Theological Schools 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, and 150T, or by such courses as Psych 141 and Soc 159. Additional courses are advised for students interested in religious education. The pretheological student is free to choose whatever major he desires. Pretheology faculty advisers will assist in course programming. For further information consult theological school catalogs.

**PREVETERINARY**

Students planning to attend a school of veterinary medicine may satisfy the first two years of the program at Fresno State College. Recommended courses are Ag 1, AH 1, 2, 71, Biol 1A, Chem 1A-B, 8, 105, Phys 2A-B, Zool 1, 103, 160. The School of Agriculture is equipped to provide valuable experience with large animals through the student project program. Students desiring further information regarding the preveterinary curriculum should consult the Dean of the School of Agriculture.

# 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.

### APPLICATION FOR DEGREE OR CREDENTIAL

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

### 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*. If the degree is completed at the end of the first or second summer session, credits earned during the last previous regular semester of residence, which are not needed to satisfy any degree requirement, may be similarly listed as *post-baccalaureate credit*. This will be possible provided the student is continuously in good academic standing from the beginning of that semester. 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. Other students, following the completion of approximately 60 semester units, should file a request for an advanced standing evaluation at the Evaluations Office. Upon completion of approximately 90 semester units, a student should request a degree evaluation 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 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*.

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

#### SCHOLARSHIP REQUIREMENTS

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

See also *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, SM, SW, or W series.) Students are expected to take these activities during their first four semesters. The physical education requirement may be waived only on request for students who have 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. See *General Education Requirements*.

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

#### FOREIGN LANGUAGE REQUIREMENT

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

However, some 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, in addition to his field of specialization, each student shall have an opportunity to prepare for the broad responsibilities society expects a college graduate to accept. Toward this end, the general education program places particular emphasis on those kinds of knowledge and understanding which a liberal arts institution of higher education is especially equipped to provide.

The *California Administrative Code Title 5* provides for a minimum of 45 units of General Education, with 31 specified units and 14 units distributed by the college. Fresno State College interprets this requirement as outlined in this section for degree programs. (See *School of Education* for information on somewhat different and additional general education requirements for credentials.)

### Selection of Courses

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

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

General education requirements are in addition to degree major requirements; no units counted as part of a student's degree major may also be counted as part of his 45 units of general education. This regulation extends to those 4-unit art and philosophy courses which carry 1 unit of group 5 composition credit; students majoring in art or philosophy or who are seeking to complete a credential program must satisfy the composition requirement through use of English 1 or 40T. Appropriate general education courses may be used toward completion of a minor or toward "Additional Requirements" beyond the degree major.

## GENERAL EDUCATION REQUIREMENTS

The statements in *italics* define the intent of the program. Courses at Fresno State College acceptable to meet this intent are listed below; approved transfer courses will also be accepted. A minimum of 45 semester units is required.

- Units*
1. SOCIAL SCIENCES ..... 9
- To include at least one course from the area of man and culture and provide for meeting the requirement in American history and federal, state, and local government.*
- SELECT ONE FROM EACH GROUP:  
 Man and Culture: Hist 1, 2, 7, Anthro 2, Geog 3, 4, Soc 1; IS 93, 193 (for foreign students only).  
 American History: Hist 11, 12 167, 172, 173, 174, 176, 177, 181.  
 American Government: Pol Sc 11, 1A-B, 101.
2. NATURAL SCIENCE ..... 9
- To include at least one basic concept course in life science and one in physical science. See course descriptions for possible restrictions on combinations of courses.*
- SELECT AT LEAST ONE FROM EACH GROUP:  
 Physical Science: Phys Sc 10, 12, Physics 2A, 4A, Chem 1A, 2A, Geol 1, 1L.  
 Biological Science: Biol 1A, 1B, 2A, Bot 1, Zool 1.  
 SELECT ADDITIONAL SCIENCE (if needed to complete units):  
 Physics 2B, 4B, 4C, 55, Chem 1B, 2B, 8, Geog 5, Biol 2B, Physio 1, Phys Sc 21.
3. LITERATURE, PHILOSOPHY, AND THE ARTS ..... 6
- To include an introduction to literature, philosophy, or logic (three units) and one or more courses providing experience in or acquaintance with creative expression in the arts.*
- SELECT ONE FROM LITERATURE, PHILOSOPHY, OR LOGIC:  
 Engl. 20.  
 Phil 20T, 25. (3 units will apply)
- SELECT THREE UNITS FROM THE FOLLOWING ARTS:  
 Art 1, 5, 6, 20T, 30, 60, 105T, 120T, 160.  
 Mus 19, 1 or 101, 10 or 110, 76T, 176T.  
 Phil 150T (Aesthetics)  
 Drama 62, 184, 185A, 185B, R-TV 128, Spch 22, 122.  
 IA 133, 146, 162, 177, 179.  
 PE 63 or 163, C116, C117, C118.
4. HEALTH AND PHYSICAL EDUCATION ..... 3
- To include physical education activity and to meet the mental and physical health requirements. The college requires four semesters of physical education; two units apply here. See Special Course Requirements.*
- SELECT FOUR SEMESTERS (TWO UNITS APPLY HERE) PE M, C, W, SM, SW, series.  
 SELECT ONE: H Sc 90, 91.
5. ORAL AND WRITTEN ENGLISH ..... 6
- To be equally divided between oral and written English.*
- REQUIRED: Spch 21.  
 SELECT ONE: (a) Engl 1 or 40T.  
 (b) One unit from each of any three courses: Art 5, 6, 105T, Phil 20T, 100T, 150T. (This alternative is not open to art and philosophy majors or to credential candidates.)
6. PSYCHOLOGY ..... 3
- To include an introduction to psychology.*
- SELECT ONE: Psych 7, 10.

## 7. ADDITIONAL UNITS OUTSIDE MAJOR FIELD TO COMPLETE TOTAL OF 45 UNITS

9

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

### SELECT FROM AT LEAST TWO CATEGORIES:

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

**FOREIGN LANGUAGES:** Any courses in foreign language.

**HUMANITIES:** Engl 50T, 138, 159T, 169T, Ling 134, Phil 100T, 150T, courses listed in English and Philosophy in Requirement 3.

**MATHEMATICS:** Math 29, 30, 40, 51, 71, 72, 75, 76, 103, 140.

**NATURAL SCIENCES:** Biol 173, Geol 2, 189, 189L, courses listed in Requirement 2.

**SOCIAL SCIENCES:** Econ 1A, 1B, 110, Geog 116, 117, Hist 3, 176, 177, 181, Soc 2, 111, courses listed in Requirement 1.

**ARTS:** Courses listed in Requirement 3.

**PSYCHOLOGY, JOURNALISM, BUSINESS, HOME ECONOMICS, SPEECH ARTS, AGRICULTURE:** Psych 145, Jour 104, 150, Bus Ad 8, 10, H Ec 42, 131, PAC (formerly Spch) 121, 170, 171, AH 1, Vit 15.

## BACHELOR OF ARTS DEGREE

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

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

## BACHELOR OF SCIENCE DEGREE

For the bachelor of science degree, a minimum of 124 to 136 semester units depending on the major field must be completed. The general degree requirements, general education requirements, and one major must be satisfactorily completed; see *Degree Majors and Minors*. Courses used to meet the general education requirement may not apply on the major. If a second major is taken concurrently or consecutively, courses acceptable for satisfaction of general education requirements for the first major may be used to satisfy second major requirements.

## BACHELOR OF 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	Industrial engineering *	BS
Aerospace studies	minor only	Industrial technology *	BS
Agribusiness *	BS	automotive, drafting, electrical, graphic arts, metal, wood	
agricultural mechanics, animal science, business, plant science		Journalism	BA
Agricultural engineering *	BS	news-editorial, public relations and advertising, R-TV news communication, technical writing and editing	
Agriculture	BS, MS	Latin	minor only
agricultural inspection and services, agricultural mechanics, agricultural science (animal science, plant science), agronomy, animal husbandry, dairy science, (dairy husbandry, dairy industry), general agriculture, horticulture, ornamental horticulture, poultry husbandry, viticulture and enology (enology, viticulture)		Latin-American studies *	BA
Anthropology	BA	Linguistics *	MA
Art	BA, MA	Marketing *	BS
Biology	BA, MA	Mathematics	BA, BS, MA, MS
Botany *	BA	Mechanical engineering *	BS
(see Biology MA)		Microbiology *	BA, BS, MA
Business	MS	(see Biology MA)	
Business administration *	BS, MBA	Music	BA, MA
Chemistry	BA, BS, MS	Nursing *	BS, MS
City and Regional Planning	MCRP	Office administration *	BS
Civil engineering *	BS	Philosophy	BA
Criminology *	BS, MS	Philosophy-psychology *	BA
corrections, law enforcement		Physical education—men	BA, MA
Dramatic art	BA	Physical education—women	BA, MA
(see Speech MA)		general, dance I and II	
Economics	BA, MA	Physical science	minor only
Education *	BA, MA	Physics	BA, BS, MA, MS
Electrical and electronics engineering *	BS	Political science	BA, MA
English	BA, MA	Psychology	BA, MA
Foreign language *	MA	Public administration	BA
French, German, Spanish		(see Political science MA)	
French	BA	Radio-television broadcasting	BA
(see Foreign language MA)		(see Speech MA)	
Geography	BA, MA	Recreation	BS
Geology	BA	Russian	BA
German	BA	Social science *	BA
(see Foreign language MA)		Social welfare *	BA
Health science	BA	Social work *	MSW
health and safety, public health, sanitation		Sociology	BA
(see Education MA)		Spanish	BA
History	BA, MA	(see Foreign language MA)	
Home economics	BA, MS	Special *	BA
Industrial arts	BA, BVEd, MA	(see below)	
		Speech	BA, MA
		public address-communication, speech correction-audiology	
		Zoology *	BA
		(see Biology MA)	

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

## 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, 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 requirements in accordance with one of the options listed below. For a detailed outline of major-minor options, see *School of Education—Major and Minor Requirements for Standard Teaching Credentials*.

1. A major in an academic subject matter area commonly taught in the public schools.

2. A major and a minor, each of which is in a subject matter area commonly taught in the public schools, and one of which is in an academic subject matter area. Specialized preparation may be substituted for the minor when the major is in an academic subject matter area.

3. Two minors in subject matter areas commonly taught in the public schools and a major, other than education and educational methodology, not commonly taught therein. If the major is not in an academic subject matter area, each minor shall be in an academic subject matter area. If the major is in an academic subject matter area, one of the minors shall be in an academic subject matter area. Specialized preparation may be substituted for one of the minors.

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.



## SCHOOL OF GRADUATE STUDIES

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# SCHOOL OF GRADUATE STUDIES

Phyllis Welch Watts, Dean

The School of Graduate Studies embraces all graduate programs and activities in the college, including programs leading to the master of arts degree in 17 fields, the master of science degree in 7 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	History, MA
Art, MA	Industrial Arts, MA
Biology, MA	Linguistics, MA
Business, MBA, MS	Mathematics, MA, MS
Chemistry, MS	Microbiology, MA
City and Regional Planning, MCRP	Music, MA
Criminology, MS	Nursing, MS
Economics, MA	Physical Education, MA
Education, MA	Physics, MA, MS
English, MA	Political Science, MA
Foreign Language, MA	Psychology, MA
(French, German, Spanish)	Social Work, MSW
Geography, 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. (Po-

tential 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 are admitted to graduate standing, programmed, and advanced to candidacy under the same 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*. Normally instructions for achieving classified status are mailed by the Dean, School of Graduate Studies to admitted students who have indicated degree objectives. Any degree aspirant who does not receive instruction in the mail is invited to come or write to the Dean, School of Graduate Studies, for this material prior to consulting an adviser.

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 over-all 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 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. 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.
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, a seminar alternative.

It is the student's responsibility to complete the specific courses listed on his contract program. Once a contract program has been approved by the 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 the specifications for the master's thesis, copies of which 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.

#### APPLICATION FOR MASTER'S DEGREE

An application for the master's degree must be filed in the Office of the Dean, School of Graduate Studies, 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 *College Calendar* or *Schedule of Courses*; see also *Schedule of Fees*.)

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

Students are warned that 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 a seminar alternative to the thesis, a student must have been advanced to candidacy and must have maintained a B average on his contract program.

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

To be eligible to receive the master's degree *with distinction* a student must have earned a 3.9 grade-point average on the contract program for the master's degree or on all upper division and graduate work subsequent to the bachelor's degree. 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 from abroad whose native language is not English and who are studying in this county for the first time, are expected to enroll in International Studies 293 and appropriate work in English as a foreign language. International Studies 295 is required during the last semester. Both courses apply

toward degrees. For further information, see *International Study Programs—Graduate Courses*.

Depending on the quality of his work in the first semester and his ultimate purpose, the 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 450 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. The college offers such a program beginning the second week in July at a cost of \$141 for fees, room, and board. This intensive program should not be confused with the International Studies program required of all students from abroad.



# COURSES OF INSTRUCTION

## PRELIMINARY

## COURSES OF INSTRUCTION

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# COURSES OF INSTRUCTION

## ORGANIZATION

For administrative purposes the 35 departments of the college are organized in 7 schools. The following section on courses of instruction is arranged alphabetically by schools and, where appropriate within schools, alphabetically by department and course designation. At the beginning of the section on a school or department there is a statement of the requirements for completion of major, minor, and other programs, followed by descriptions of all courses of instruction offered as part of the regular program of the college. The listed faculty members are those for the 1967-68 academic year.

### *School of Agriculture*

Agriculture  
Agricultural Mechanics Department  
Animal Science Department  
Animal Husbandry  
Dairy Science  
Poultry Husbandry  
Plant Science Department  
Agronomy (Crop Production)  
Horticulture  
Ornamental Horticulture  
Viticulture and Enology

### *School of Arts and Sciences*

Anthropology-Sociology Department  
Art Department  
Biology Department  
Bacteriology  
Biology  
Botany  
Entomology  
Physiology  
Zoology  
Chemistry Department  
Economics Department  
English Department  
Foreign Language Department  
Foreign Language  
French  
German  
Italian  
Latin  
Portuguese  
Russian  
Spanish  
Geography Department  
Geology Department  
History Department  
Linguistics Department  
Mathematics Department  
Music Department  
Philosophy Department

Physical Education and Recreation  
Department  
Physical Education  
Recreation  
Physical Science  
Physics Department  
Political Science Department  
Psychology Department  
Social Science  
Speech Arts Department  
Dramatic Art  
Radio-Television Broadcasting  
Speech

### *School of Business*

Accounting  
Business  
Business Administration  
Marketing  
Office Administration  
Accounting and Quantitative  
Studies Department  
Finance and Industry Department  
Management and Marketing  
Department  
Office Administration Department

### *School of Education*

Elementary Education Department  
Secondary Education Department  
Advanced Studies Department

### *School of Engineering*

### *School of Professional Studies*

Aerospace Studies Department  
Criminology Department  
Health Science Department  
Home Economics Department  
Industrial Arts and Technology  
Department  
Journalism Department  
Nursing Department

### *School of Social Work*

## 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 *Extension Classes*.

Numbers 300-399 designate courses whose purpose is to meet professional needs which cannot be served by established undergraduate or graduate offerings. These courses assume completion of the bachelor's degree and professional competence and focus on current problems of enrolled students in their professional service. Although 300 series courses are designed primarily for purposes other than use on degrees and credentials, in individual cases and subject to prior departmental approval, they 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 also required. Titles appear in the *General Catalog*; descriptions appear only in appropriate *Extension* and *Summer Session Bulletins*.

## OTHER DESIGNATIONS

For *symbols* appearing after course numbers, A-B indicates a two-semester sequence normally to be taken in order; A and B courses which may be taken independently are normally listed as separate items. The following symbols, some of which may appear only on transcripts and other documents, usually indicate: L, a laboratory associated with another course; F, a field course; E, an extension course; G, an intensified upper division course limited to graduate students; HC, a college honors colloquium; HD, a departmental honors course; IS, an interna-

tional studies course; ML, a Moss Landing Marine Laboratories course; S, a course listed only in the *Summer Session Bulletin*; T, a topics course which can have varying subject matter within an area, usually repeatable for credit. The generic title only is given in the catalog; the specific title, in the *Schedule of Courses* and the student's transcript. X indicates an Experimental College course which will be listed in the *Schedule of Courses* and be described in the *Experimental College Bulletin*.

*Figures* in parentheses following course titles indicate the number of semester units a course carries, and the maximum total credit allowed is indicated by *max total* following the number of units. In general, each unit represents one hour per week in class and two hours in preparation. Courses involving laboratory, activity, or other application, normally require additional hours of class attendance. Lecture, laboratory hours, etc., following course descriptions indicate deviation from the usual one class hour per week for each unit of credit. Under special circumstances, 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 and under *Definitions and Eligibility* above. Unless otherwise stated, the A part is prerequisite to the B part of year courses. Student should check prerequisites before enrolling.

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

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## 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 several disciplines in addition to history which are concerned with this area of the world. 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 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) (appropriate section),
- Art 260 Seminar in Art History (2),
- Economics 114 Economics of Underdeveloped Areas (3),
- Geography 126 Australia, New Zealand, and the Pacific Islands (3),
- Geography 128T Eurasian Regions (3; max total 9),
- Geography 270 Seminar in South Asia (3; max total 6)
- History 7 Far Eastern Civilizations (3),
- History 104 China (3),
- History 105 Japan and Korea (3),
- History 106 India and Pakistan (3),
- History 107 Southeast Asia,
- History 109T Studies in Non-Western History (1-3),
- History 205 Seminar in Far Eastern History (3),
- Political Science 141 Governments of the Commonwealth (3).

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

### GRADUATE 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 279 Community Development, 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.

### 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 composed of equal numbers of 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 numbers preceded by X. They are not described in this catalog until permanently accepted. A special bulletin published each semester provides course descriptions and other information concerning the program.

### HONORS PROGRAM

The honors program is designed to serve superior undergraduate students by encouraging intensive scholarship and creative abilities. Particular stress is given to developing the student's capacity for independent pursuit of knowledge and dedicated commitment to scholarship. The honors program is open by invitation of the college to all qualified undergraduates. Invitations to participate in the program are extended on the basis of proven capacity for outstanding academic performance as indicated by faculty recommendations, scholastic record, and entrance test scores. Students who complete the requirements are eligible for special recognition at graduation, with general college honors, departmental honors, or both.

The *general college honors program* provides study in specially designed colloquia which are broad in scope and may be interdepartmental. Lower division general college honors colloquia require no prerequisites other than admission to and satisfactory standing in the honors program; upper division general college honors colloquia prerequisites are generally determined by the department or departments offering the course. Information about current college policy and regulations regarding the honors program and graduation with general college honors may be obtained from the Honors Program Coordinator.

The *departmental honors program* provides specialization beyond the normal undergraduate requirements in a major field. Departmental honors programs and requirements vary from department to department. Consult department for further information.

### COURSES

The subject matter and course titles of departmental honors courses and general college honors colloquia vary from semester to semester. For the offering in any particular semester see the *Schedule of Courses*. Honors courses are designated by HD or HC preceding the course number. HD indicates a departmental honors course; HC, a general college honors colloquium. Enrollment in honors courses is by invitation.

**Departmental Honors Courses Offered 1967-1968****Hist HD 1. Western Civilization to 1650 (3)**

Honors section of Hist 1.

**Hist HD 2. Western Civilization Since 1650 (3)**

Honors section of Hist 2.

**General College Honors Colloquia Offered 1967-1968****(F Lang) HC 170. Poetry and Music (3)**

Analytic study of the poetry of Goethe, Schiller, Heine, Uhland, Mörike, Eichendorff and others as set to music by Schubert, Schumann, Wolf, Beethoven, Brahms, and others. Recital performances.

**(Psych) HC 170. Creativity (3)**

Understanding of and training in creative processes by direct participation in applying the principles and techniques of creative functions to modes of thinking and everyday living.

**INTERNATIONAL STUDY 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 Study Campus Program 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. Grading on a "pass-withdraw" basis will be characteristic in the lower division courses. (See *Regulations and Procedures—Pass-Withdraw Grading*).

*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 IS 1, 2, and 3 as described below.

*First Semester Program:* Successful completion or waiver of the Summer Orientation Program will lead to enrollment in IS 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, IS 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 IS 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 IS 193, but will be required to enroll in IS 293 and 295.

### COURSES

#### **IS 1. Oral English (2)**

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

#### **IS 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.

#### **IS 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.

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

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

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

Meets speech requirement for general education. Prerequisite: permission of instructor. Advanced drills in articulation, intonation, rhythm, and word and sentence stress. Speech composition including organization, delivery, and support.

#### **IS 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.

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

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

#### **IS 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.

#### **IS 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).

**IS 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****IS 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*.)

**IS 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*.)

**OVERSEAS PROGRAM**

The California State Colleges offer academic year programs of study at a number of distinguished universities abroad. In 1968-69 the cooperating universities are: University of Aix-Marseille, France; Free University of Berlin and University of Heidelberg, Germany; 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 with a maximum of thirty units for two semesters.

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 1968-69 these costs are: Taiwan, \$1,770; France, Germany, Spain, \$2,070; Italy, Japan, \$2,170; Sweden, \$2,370. Payments may be scheduled throughout the year.

Programs in 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 1969-70 academic year should be made early in the fall semester 1968. 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**

Fresno State College students under the California State Colleges International Study 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 92 or 192. Graduate students may use Independent Study (290) and International Study 292.

**IS 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.

**IS 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.

**IS 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 and also those who wish to broaden their studies in a given discipline with a background in the Latin American area. 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 3, Anthr 2, and Pol Sc 11, 1A or 1B.

#### MAJOR

	<i>Units</i>
Anthro 120, Geog 142, 143 .....	9
Hist 160A-B, 162A-B-C, 165, 166 or 169T, Pol Sc 146 .....	13
Span 104A-B .....	6
Approved Latin American Studies electives .....	12
	<hr style="width: 100%; border: 0.5px solid black;"/>
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#### 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 146 .....	3
Span 104A, 101 .....	6
Approved Latin American Studies electives .....	8
	<hr style="width: 100%; border: 0.5px solid black;"/>
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**MOSS LANDING MARINE LABORATORIES**

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.*

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

## SCHOOL OF AGRICULTURE

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Agricultural Mechanics	
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Poultry Husbandry	
Plant Science .....	99
Agribusiness	
Agricultural Inspection and Services	
Agricultural Science	
Agronomy	
Horticulture	
Ornamental Horticulture	
Viticulture and Enology	

# SCHOOL OF AGRICULTURE

Lloyd Dowler, Dean

Assistant Dean (Acting) ..... Robert J. Glim

*Department*

*Chairman*

Agricultural Mechanics ..... Clarence D. Jensen

Animal Science ..... Jesse T. Bell

Plant Science ..... Wayne E. Biehler

The School of Agriculture provides degree and nondegree curricula preparatory to professions and occupations in agriculture and related fields. For information concerning preveterinary medicine, see *Preprofessional Preparation*. The college farm is organized and operated to provide experience and practical training. Eleven hundred and ninety acres serve as a laboratory and production unit where students carry on supervised farming programs in animal and plant science. In addition, livestock, vineyards, orchards, and crop land are maintained for laboratory use. 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 twelve specialized majors and in agricultural engineering; three-year technical curricula for students not desiring degree or transfer credit; an agriculture minor; short courses for those not enrolled in the college program but engaged in farming or allied occupations.

Students desiring to qualify for teaching credentials should consult the Dean of the School of Agriculture or credential advisers. For revised 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*.

**BACHELOR OF SCIENCE DEGREE IN AGRICULTURE**

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

**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 Mechanics*, *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**

Any student who has graduated from high school may make application for admission to the technical agriculture program. Admission to this program is dependent upon a reasonable score on the entrance examination (as determined by appropriate college officials) and approval of the Dean of the School of Agriculture. Technical agriculture programs stress technical and practical training appropriate to the San Joaquin Valley and include maximum laboratory use of the college farm. Students may take production programs in fattening of livestock, growing of crops, and management of breeding herds, flocks, vineyards, and orchards and are employed so far as possible to assist with the operation of the college farm.

Students qualify for the three-year technical agriculture certificate upon completion of the required general education and related courses and one of the technical majors in the *Agricultural Mechanics*, *Animal Science*, or *Plant Science Departments*, with additional selected production courses to make a total of 84 units. Approved nonagriculture courses open to restricted technical students: Math 27, 28; Off Ad 1; Engl 1, 6; Spch 21; Hist. 1, 11 or 12; Pol Sc 11; Biol 1A, 1B; H Sc 90, 91; PEC, M, W (activities); Mus 1 (activities); Psych 7; other specified courses required in the program.

Technical agriculture students enroll in regular agriculture courses with special arrangements to meet their needs. Students admitted to the technical agriculture program who wish to transfer to the degree program may petition the Admissions Committee for such transfer after completing 60 units at Fresno State College with a C average or better.

**MINOR**

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

**GENERAL AGRICULTURE MAJOR**

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

The requirements are flexible and especially well adapted to meet the needs of students interested in teaching vocational agriculture. The general agriculture major has been classified as academic for credentialing purposes. Many graduates have found positions with county, state, and federal agencies, or in business and services related to agriculture.

**Major Requirements**

General agriculture majors must complete a minimum of 50 units (18 units upper division) including 15 units in animal science (AH, DS and/or PH), 15 units in plant science (CP, H, OH and/or V), 6 units in agricultural mechanics; and Ag 1, 31, 112, 130, 136. The selection of courses in each of the respective departments is worked out with the student's major adviser.

**Additional Requirements**

In addition, general agriculture majors must complete the following courses: Biol 1A or B, 120, Bot 1 or Zool 1; Chem 2A-B, 8; Econ 1A; Math 29 or equivalent. A total of 128 semester units including general education is required for the bachelor of science degree.

**SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE**

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

**General Agriculture**

- 1st Year: Ag 1, Chem 2A-B, Biol 1B, AgM electives, plant and animal science electives  
 2nd Year: Ag 31, Bot 1, Econ 1A, Chem 8, AgM elective, animal and plant science electives  
 3rd Year: Ag 130, 136, Biol 120, Math 29, animal and plant science electives (u.d.)  
 4th Year: Ag 112, animal and plant science electives (u.d.)

**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*.

**Courses**

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

**AGRICULTURE****Ag 1. Agricultural Orientation (1)**

Agriculture and its related agencies; job opportunities.

**Ag 13. Pest Control (3)**

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

**Ag 27. Agribusiness Mathematics (3)**

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

**Ag 31. Agricultural Economics (3)**

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

**Ag 40. Project Records (1)**

For students planning to sign up for a project; may be taken concurrently. Organization of the Agricultural Foundation; budgets, contracts, and records needed to conduct an agricultural project under college supervision. (See *Supervised Projects* in the Animal and Plant Science Departments.)

**Ag 105. Plant Quarantine Laws (3)**

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

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

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

**Ag 112. Farm Management (3)**

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

**Ag 113. Apiculture (2)**

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

**Ag 114. California Fruit and Vegetable Standards (3)**

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

**Ag 130. Plant Pathology (4)**

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

**Ag 136. Soils (3)**

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

**Ag 146. Irrigation (3)**

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

**Ag 151. Farm Accounting (3)**

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

**Ag 159. Spray Materials (3)**

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

**Ag 180. Special Problems (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 animal science, plant science, or agricultural mechanics.

**Ag 182. Soil Management (3)**

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

**Ag 184. Advanced Irrigation (3)**

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

**Ag 186. Methods of Teaching General Agriculture (3)**

Prerequisite: 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.

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

See *Regulations and Procedures—Independent Study*.

**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.

**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.

**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 (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.

**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 MECHANICS DEPARTMENT

Principal Vocational Instructor: C. Jensen (Chairman)

Senior Vocational Instructor: De Tar

Intermediate Vocational Instructor: H. Martin

Lecturer: From

Part-time: A. Johnson

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

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

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

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

### MAJOR REQUIREMENTS

#### Agribusiness (Agricultural Mechanics Option)

*Units*

*BS Degree Major:* AgM 15, 17, 18A, 25, 81, 91, 111, 115, 116, 151A-B, 158A, 159; Ag 1, 31, 112, 136, 146, 182 or 184; Acct 1A-B; Mkt 100; Bus Ad 102, 110, 118A-B, 133, 151; business elective (3 u.d.) ..... 74

#### Agricultural Mechanics

*BS Degree Major:* AgM 15, 17, 18A-B, 25, 81, 91, 111, 115, 116, 121, 151A-B, 158A, 159; Ag 1, 136, 146, 151 ..... 42

*Technical Certificate:* AgM 15, 17, 18A-B, 25, 81, 111, 115, 116, 121; Ag 1, 27, 31, 40, 146, 151; AgM elective (2 un) ..... 36

#### Additional Requirements—BS Degree

In addition to major requirements, degree students (except agribusiness) must complete the following courses: Chem 2A, Physics 2A; animal science and/or plant science electives (6 un); IA 74; Econ 1A; Biol 1A or B; Math 29, 30. Agribusiness majors take Biol 1A or B, Chem 2A, Physics 2A, Econ 1A-B, Math 29, 30. A total of 128 semester units including general education is required for the bachelor of science degree.

#### Additional Requirements—Technical Certificate

Technical students must complete in addition to the major requirements, the following courses: animal science and/or plant science electives (10 un); Hist 11 or 12, Pol Sc 11; Biol 1A or B; PE (4 semesters); H Sc 90 or 91; Engl 1; Spch 21. A total of 84 semester units is required for the technical certificate.

#### SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-17 units per semester. A total

of 128 units must be completed for the bachelor of science degree. (See *Degrees and Credentials*.)

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

1st Year: Ag 1, AgM 15, 17, 18A, Math 29, 30, Biol 1A or B

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

3rd Year: Ag 31, 136, AgM 111, 115, 116, 159, Bus Ad 102, 110, 118A-B, 133

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

#### **Agricultural Mechanics**

1st Year: Ag 1, AgM 15, 17, 18A, Biol 1A or B, Math 29, 30

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

3rd Year: Ag 136, 146, AgM 111, 115, 116, IA 74, animal or plant science electives

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

### **Courses**

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

#### **AGRICULTURAL MECHANICS**

##### **AgM 15. Agricultural Mechanics (2)**

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

##### **AgM 17. Farm Tractors (2)**

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

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

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

##### **AgM 25. Agricultural Drafting (2)**

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

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

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

##### **AgM 91. Farm Surveying (2)**

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

**AgM 111. Rural Electrification (2)**

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

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

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

**AgM 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)

**AgM 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)

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

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

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

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

**AgM 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)

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

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

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

See *Regulations and Procedures—Independent Study*.

## ANIMAL SCIENCE DEPARTMENT

Principal Vocational Instructor: Bell (Chairman), Glim, Hixson, Ilg, Rousek, Selkirk, W. E. Smith

Associate Professor: Ball

Senior Vocational Instructor: Pflueger

Intermediate Vocational Instructor: Axtell, D. Nelson

Junior Vocational Instructor: Briggs

Part-time: Kelly, Larsen, J. Pearson, Sanders, W. Smith, Snell, Young

The Animal Science Department offers majors in agribusiness, agricultural science, animal husbandry, dairy husbandry, dairy industry, poultry husbandry, 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 *dairy science* major with *dairy industry* option prepares students for jobs in dairy plants in processing milk, ice cream, cheese, butter, and other dairy products. The college maintains its own processing plant for bottling milk and teaching the required courses in butter making, ice cream, cheese, and dairy plant management. Dairy products are processed for the college cafeteria and retail sales store by students as a part of the practical training program.

The *poultry husbandry* major prepares students for occupations in commercial egg production, fryer 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 along with sunshine brooders; intermediate growing batteries and wire floor cage houses. Over 3,000 birds are maintained in the college flock.

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

## 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. Completion of a one-unit course, Ag 40, Project Records, is required either prior to or concurrently with a project.

In the Animal Science Department, some students feed out steers, lambs, and pigs. Others have fryer, turkey, or 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

	<i>Units</i>
<b>Agribusiness (Animal Science Option)</b>	
<i>BS Degree Major:</i> Ag 1, 31, 112, 136, AH 1, 71, 116, 172, 175; DS 11A, PH 1; elect 15 units from the following majors (animal husbandry, dairy husbandry option, dairy industry option, and/or poultry husbandry), 9 of which must be completed in one major; Acct 1A-B, Mkt 100, Bus Ad 102, 110, 118A-B, 133, 151; elect Bus Ad 171, 172, 177, or 179 .....	76
<b>Agricultural Science (Animal Science Option)</b>	
<i>BS Degree Major:</i> Ag 1, 112, AH 1, 22, 30, 40, 71, 172, 175; <i>animal science</i> electives from one of the following fields—animal husbandry, poultry husbandry, dairy science (9 un).....	34
<b>Animal Husbandry</b>	
<i>BS Degree Major:</i> AH 1, 2, 22, 30, 40, 71, 106, 115, 116, 172; Ag 1, 27, 112, 136, 151; AH electives (4 un) .....	46
<i>Technical Certificate:</i> AH 1, 2, 22, 25, 30, 40, 71, 172; Ag 1, 27, 31, 40, 151; AH electives (5 un) .....	39
<b>Dairy Science (Dairy Husbandry Option)</b>	
<i>BS Degree Major:</i> DS 11A-B, 53, 55, 56, 102, 106, 165; Ag 1, 27, 136, 151; AH 71, 115, 116, 172; DS elective (2 un) .....	46
<i>Technical Certificate:</i> DS 11A-B, 53, 55, 56, 102, 106, 108; Ag 1, 27, 31, 40, 151; AH 71, 172 .....	38
<b>Dairy Science (Dairy Industry Option)</b>	
<i>BS Degree Major:</i> DS 11A-B, 53, 58, 111, 112, 151, 154, 156, 165, 185, 189; Ag 1, 27 .....	37
<i>Technical Certificate:</i> DS 11A-B, 53, 55, 58, 111, 112, 189; Ag 1, 27, 31, 40, 151 .....	32
<b>Poultry Husbandry</b>	
<i>BS Degree Major:</i> PH 1, 32, 34, 161, 162, 163, 164, 181, 182; Ag 1, 27, 136, 151; AH 115, AH or DS electives (8 un).....	47
<i>Technical Certificate:</i> PH 1, 32, 34, 161, 162, 163, 164, 182; Ag 1, 27, 31, 40, 151; AH or DS electives (3 un).....	37

#### Additional Requirements—BS Degree

In addition to major requirements, degree students must complete the courses indicated below for each program. A total of 128 semester units including general education is required for the bachelor of science degree. Ag 27 not required for students with credit in second year high school algebra or equivalent.

*Agribusiness (Animal Science Option):* Biol 1B; Chem 2A-B, 8; Econ 1A-B, Math 40 or 51.

*Agricultural Science (Animal Science Option):* Mcrb 20, Biol 1A, 120, Chem 1A-B, 8, 105, 109, Math 40, Physics 2A, Zool 1, Biol 116 or Zool 103.

*Animal Husbandry:* Mcrb 20; AgM electives (6 un); Zool 1; Chem 2A-B, 8; Biol 1A, 120; Econ 1A.

*Dairy Science (Dairy Husbandry Option):* Mcrb 20; AgM electives (6 un); Zool 1; Chem 2A-B, 8; Biol 1A, 120; Econ 1A.

*Dairy Science (Dairy Industry Option):* Mcrb 20; AgM electives (6 un); Zool 1; Chem 2A-B, 8; Biol 1A; Econ 1A; Bus Ad 110; Acct 1A.

*Poultry Husbandry:* Mcrb 20; AgM electives (6 un); Zool 1; Chem 2A-B, 8; Biol 1A, 120; Econ 1A.

#### **Additional Requirements—Technical Certificate**

Technical students must complete, in addition to the major requirements, the following courses. A total of 84 semester units is required for the technical certificate.

AgM electives (6 un), animal science and/or plant science electives (10 un), Hist 11 or 12, Pol Sci 11, Biol 1A or B, Engl 1, Spch 21, PE (4 semesters), H Sc 90 or 91.

#### **SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE**

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

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

1st Year: Ag 1, Biol 1B, Chem 2A-B, AH 1, PH 1, animal science electives

2nd Year: AH 71, 172, DS 11A, Acct 1A-B, Chem 8, Econ 1A-B, Math 40 or 51

3rd Year: Ag 31, 136, AH 116, Bus Ad 102, 110, 118A-B, 133

4th Year: Ag 112, AH 175, Bus Ad 151, Mkt 100, Bus Ad 171, 172, 177, or 179, animal science electives

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

1st Year: Ag 1, AH 1, 22, Biol 1A, Math 40, Zool 1

2nd Year: AH 30, 40, Chem 1A-B

3rd Year: AH 71, 172, Mcrb 20, Biol 120, Chem 8, 105, 109, Physics 2A

4th Year: AH 175, Ag 112, animal science electives, Biol 116 or Zool 103

##### **Animal Husbandry**

1st Year: Ag 1, 27, AH 1, 2, Biol 1A, Chem 2A-B, AgM electives

2nd Year: AH 22, 71, 172, Chem 8, Econ 1A, Zool 1, AH and AgM electives

3rd Year: Ag 136, AH 30, 115, 116, Mcrb 20, Biol 120

4th Year: Ag 112, 151, AH 40, 106, AH electives

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

1st Year: Ag 1, 27, DS 11A-B, Biol 1A, Chem 2A-B, AgM electives

2nd Year: AH 71, 172, DS 53, 55, 56, Chem 8, Econ 1A, Zool 1, AgM elective

3rd Year: Ag 136, AH 115, 116, Mcrb 20, Biol 120

4th Year: Ag 151, DS 102, 106, 165, DS elective

##### **Dairy Science (Dairy Industry Option)**

1st Year: Ag 1, DS 11A-B, Biol 1A, Chem 2A-B, AgM electives

2nd Year: Ag 27, DS 53, Chem 8, Econ 1A, Zool 1, AgM elective

3rd Year: DS 58, 111, 112, Acct 1A, Mcrb 20, Bus Ad 110

4th Year: DS 151, 154, 156, 165, 185, 189

**Poultry Husbandry**

1st Year: Ag 1, PH 1, 34, Biol 1A, Chem 2A-B, AgM electives

2nd Year: Ag 27, PII 32, Chem 8, Econ 1A, Zool 1, AgM elective

3rd Year: Ag 136, AH 115, PH 161, 163, 164, Mcarb 20, Biol 120

4th Year: Ag 151, PH 162, 181, 182, AH or DS electives

**Courses**

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

**ANIMAL HUSBANDRY****AH 1. Animal Science (3)**

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)

**AH 2. Livestock Selection (2)**

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

**AH 3. Livestock Judging (2)**

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

**AH 10. Slaughtering and Meat Cutting (3)**

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

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

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

**AH 25. Fitting and Showing Livestock (3)**

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

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

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

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

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

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

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

**AH 71. Feeds and Feeding (3)**

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

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

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

**AH 103. Advanced Livestock Judging (2)**

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

**AH 106. Animal Breeding (3) (Same as DS 106)**

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

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

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

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

Prerequisite: AH 115 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)

**AH 122. Advanced Beef Production (3)**

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

**AH 133. Market Swine Production (3)**

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

**AH 143. Advanced Sheep and Wool Technology (3)**

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

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

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

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

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.

**AH 172. Animal Nutrition (3)**

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

**AH 175. Grading and Marketing Livestock (3)**

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

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

See *Regulations and Procedures—Independent Study*.

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

Prerequisite: junior standing; permission of instructor. Topics in animal science: anatomy, physiology, pathology, nutrition, genetics, economics.

**DAIRY SCIENCE****DS 11A-B. Dairying (3-3)**

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

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

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

**DS 55. Dairy Cattle Judging (2)**

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

**DS 56. Dairy Cattle Selection (2)**

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

**DS 58. Judging Dairy Products (2)**

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

**DS 102. Dairy Farm Management (3)**

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

**DS 105. Advanced Dairy Cattle Judging (2)**

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

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

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

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

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

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

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

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

Prerequisite: DS 11A or 111, permission of instructor. Chemistry, physics, and mathematics which apply to the commercial production of butter, concentrated products, cheese, and ice cream; theory involved, equipment used, and marketing manufactured dairy products.

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

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

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

Prerequisite: DS 111, 112, Acct 1A or permission of instructor. Application of principles of management to dairy manufacturing plants; cost accounting, selling, advertising, and labor problems; current local problems.

**DS 156. Marketing Dairy Products (3)**

Prerequisite: DS 111, 112, Acct 1A or permission of instructor. Principles of purchasing and marketing dairy products; products of the San Joaquin Valley.

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

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

**DS 185. Advanced Testing (2)**

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

**DS 189. Advanced Dairy Products Judging (2)**

Prerequisite: DS 58. Product judging; training for participation in judging contest work. Trips to intercollegiate judging contests. (1 lecture, 3 lab hours)

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

See *Regulations and Procedures—Independent Study*.

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

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

**PH 32. Poultry Feeding (3)**

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

**PH 34. Egg Processing and Marketing (3)**

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

**PH 161. Turkey Management (3)**

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

**PH 162. Poultry Management (3)**

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

**PH 163. Poultry Products and Processing (3)**

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

**PH 164. Hatchery Management (3)**

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

**PH 181. Poultry Breeding (3)**

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

**PH 182. Poultry Diseases and Sanitation (2)**

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

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

*See Regulations and Procedures—Independent Study.*

## PLANT SCIENCE DEPARTMENT

Principal Vocational Instructors: Biehler (Chairman), Braun, Petrucci, Strong

Senior Vocational Instructor: Karle, R. D. Harrison, LeValley, Van Elswyk

Intermediate Vocational Instructor: Norton

Part-time: Buxman, Frencher, Ishimoto, Orr, Wilson

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

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

The *agricultural inspection 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, sales positions, and teacher education in general agriculture.

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

The *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 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 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. Completion of a one-unit course, Ag 40, Project Records, is required either prior to or concurrently with a project.

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.

### MAJOR REQUIREMENTS

	<i>Units</i>
<b>Agribusiness (Plant Science Option)</b>	
<i>BS Degree Major:</i> Ag 1, 31, 106, 112, 130, 136, 146, 159, CP 60; elect 12 units from one of the following majors (ag inspection and services, agronomy, horticulture, ornamental horticulture, or viticulture and enology); Acct 1A-B, Mkt 100, Bus Ad 102, 110, 118A-B, 133, 151, business electives (3 u.d.)	68
<b>Agricultural Inspection and Services</b>	
<i>BS Degree Major:</i> Ag 1, 13, 105, 106, 113, 114, 130, 136, 151, 159, CP 12, 60, H 12, 57, 181, OH 33, V 11, 50; V 101, Ag 112, or H 112	55
<i>Technical Certificate:</i> Ag 1, 13, 27, 31, 40, 105, 106, 113, 114, 151, 159, CP 12, 60, H 12, 57, OH 33, V 11, 50	49
<b>Agricultural Science (Plant Science Option)</b>	
<i>BS Degree Major:</i> Ag 1, 106, 112, 130, 136, 159; plant science electives from one of the following fields—agronomy, horticulture, ornamental horticulture, or viticulture and enology (17 un)	34
<b>Agronomy</b>	
<i>BS Degree Major:</i> CP 11, 12, 60, 150, Ag 1, 106, 112, 130, 136, 146, 151, Bot 104, CP electives (12 un)	48
<i>Technical Certificate:</i> CP 11, 12, 60, Ag 1, 27, 31, 40, 106, 146, 151, CP electives (9 un)	35
<b>Horticulture</b>	
<i>BS Degree Major:</i> H 11, 12, 57, 112, 181, 186, Ag 1, 106, 114, 130, 136, 146, 151, Bot 104, V 11 or 16, H elective (3 un)	48
<i>Technical Certificate:</i> H 11, 12, 57, 112, 186, Ag 1, 27, 31, 40, 105, 114, 151, 159, H elective (3 un)	38
<b>Ornamental Horticulture</b>	
<i>BS Degree Major:</i> OH 3, 22, 33, 53, 123, 125, 132, 162, 163, Ag 1, 31, 106, 130, 136, 146, 159, Bot 104	51
<i>Technical Certificate:</i> OH 3, 22, 33, 53, 123, 125, Ag 1, 13, 27, 31, 40, 151, 159, H 11 or V 11	38

**Viticulture and Enology (Enology Option)**

Units

BS Degree Major: V 15, 50, 115, 116, 160, 171, Ag 1, AgM 158A-B, Mcrb 20 or 104, V electives (6 un) ..... 38-39

**Viticulture and Enology (Viticulture Option)**

BS Degree Major: V 11, 13, 15, 16, 50, 101, 110, 166, 170, Ag 1, 106, 130, 136, 146, 151, Bot 104, H 11 or 12 ..... 48

Technical Certificate: V 11, 13, 15, 16, 50, 101, 110, 166, Ag 1, 27, 31, 40, 106, 151 ..... 37

**Additional Requirements—BS Degree**

In addition to major requirements, degree students must complete the courses indicated below for each program. A total of 128 semester units including general education is required for the bachelor of science degree.

*Agribusiness (Plant Science Option)*: Biol 1A, Bot 104, Chem 2A-B, 8, Econ 1A-B.

*Agricultural Inspection and Services*: Mcrb 20, AgM electives (4 un), Bot 1, Chem 2A-B, 8, Biol 1B, Econ 1A.

*Agricultural Science (Plant Science Option)*: Mcrb 20, Biol 1B, 120, Bot 1, Chem 1A-B, 8, 105, 109, Math 40, Physics 2A, Biol 116 or Zool 103.

*Agronomy*: AgM electives (8 un), Bot 1, Chem 2A-B, 8, Biol 1B, 120, Econ 1A.

*Horticulture*: Mcrb 20, AgM electives (6 un), Bot 1, Chem 2A-B, 8, Biol 1B, 120, Econ 1A.

*Ornamental Horticulture*: Mcrb 20, AgM electives (4 un), Bot 1, Chem 2A-B, 8, Biol 1B, 120, Econ 1A.

*Viticulture and Enology (Enology Option)*: Acct 1A-B, Bus Ad 110, Chem 2A-B, 8, 105, 109, Econ 1A-B, Biol 1A, Math 29, Physics 2A-B.

*Viticulture and Enology (Viticulture Option)*: Mcrb 20, AgM electives (6 un), Bot 1, Chem 2A-B, 8, Biol 1B, 120, Econ 1A.

**Additional Requirements—Technical Certificate**

Technical students must complete, in addition to the major requirements, the following courses. A total of 84 semester units is required for the technical certificate.

AgM electives (6 un), animal science and/or plant science electives (10 un), Hist 11 or 12, Pol Sc 11, Biol 1A or B, H Sc 90 or 91, PE (4 semesters), Engl 1, Spch 21.

*Agricultural Inspection and Services* majors are not required to complete the animal science and/or plant science electives (10 un) and must complete only 4 units of AgM electives. *Agronomy* majors are required to complete 8 units of AgM electives.

**SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE**

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

**Agribusiness (Plant Science Option)**

1st Year: Ag 1, Biol 1A, Chem 2A-B, plant science electives

2nd Year: Ag 31, CP 60, Acct 1A-B, Chem 8, Econ 1A-B, plant science electives

3rd Year: Ag 106, 136, 146, Bus Ad 102, 110, 118A-B, Bot 104

4th Year: Ag 112, 130, 159, Bus Ad 133, 151, Mkt 100, business elective

**Agricultural Inspection and Services**

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

**Agricultural Science (Plant Science Option)**

1st Year: Ag 1, Biol 1B, Bot 1, Math 40, plant science electives  
 2nd Year: Chem 1A-B, plant science electives  
 3rd Year: Ag 136, Biol 120, Chem 8, 105, 109, Physics 2A, plant science electives  
 4th Year: Ag 106, 112, 130, 159, Mcrb 20, Biol 116 or Zool 103

**Agronomy**

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

**Horticulture**

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

**Ornamental Horticulture**

1st Year: Ag 1, OH 22, Biol 1B, Chem 2A-B, AgM electives  
 2nd Year: OH 33, 53, Mcrb 20, Bot 1, Chem 8, Econ 1A  
 3rd Year: Ag 106, 136, 159, OH 123, 132, Biol 120, Bot 104  
 4th Year: Ag 31, 130, 146, OH 125, 162, 163

**Viticulture and Enology (Enology Option)**

1st Year: Ag 1, Biol 1A, Chem 2A-B, Math 29  
 2nd Year: V 15, Acct 1A-B, Mcrb 20 or 104, Chem 8, 109, Econ 1A-B  
 Summer: V 50  
 3rd Year: V 115, 116, AgM 158A or V 171, AgM 158B or V 160, Chem 105,  
 Physics 2A-B  
 4th Year: V 160 or AgM 158B, V 171 or AgM 158A, Bus Ad 110, V electives

**Viticulture and Enology (Viticulture Option)**

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

**Courses**

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

**AGRONOMY****CP 11. Agronomy (3)**

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

**CP 12. Vegetable Crops (3)**

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

**CP 51. Forage Crops (3)**

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

**CP 52. Fiber and Oil Crops (3)**

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

**CP 53. Cereal Crops (3)**

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

**CP 56. Vegetable Field Crops (3)**

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

**CP 60. Weeds (3)**

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

**CP 103. Seed Production (3)**

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

**CP 105. Cotton Technology (3)**

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

**CP 118. Range Management (3)**

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

**CP 150. Crop Breeding (3)**

Prerequisite: Biol 120. Application of genetic and environmental principles to improvement of crop plants; heredity and variation in crop plants, effects of various environmental factors on crop improvements, effects of self and cross fertilization,

principles and results of selection and hybridization in crop improvement. (2 lecture, 3 lab hours)

**CP 152. Cotton Classing (2)**

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

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

See *Regulations and Procedures—Independent Study*.

**HORTICULTURE**

**H 11. Fruit Growing (3)**

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

**H 12. Fruit Production (3)**

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

**H 52. Citrus Production (3)**

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

**H 55. Subtropical Horticulture (3)**

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

**H 57. Fruit Varieties (3)**

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

**H 58. Small Fruit Culture (3)**

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

**H 112. Marketing Fresh Fruit (3)**

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

**H 181. Fruit Processing (3)**

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

**H 186. Orchard Management (3)**

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

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

See *Regulations and Procedures—Independent Study*.

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

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

**OH 22. Principles of Landscape Gardening (3)**

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

**OH 33. Plant Identification and Materials (3)**

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

**OH 53. Principles of Nursery Practice (3)**

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

**OH 123. Production of Ornamentals (3)**

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

**OH 125. Ornamental Trees (3)**

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

**OH 132. Turfgrass Production and Management (3)**

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

**OH 162. Nursery Management (3)**

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

**OH 163. Farm and Home Landscaping (3)**

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

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

See *Regulations and Procedures—Independent Study*.

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

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

**V 13. Raisin Production and Processing (2)**

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

**V 15. Enology (3)**

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

**V 16. Vineyard Operations (3)**

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

**V 50. Grape Varieties (3)**

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

**V 101. Processing and Marketing Grapes (3)**

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

**V 110. Grape Diseases and Pests (3)**

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

**V 115. Winery Practices (4)**

Prerequisite: V 15, 50, Chem 109, Mcrb 20 or 104. Principles and practices of preparation of dessert and table wines; operation of plant equipment; controlled tests; sanitation and waste disposal problems. (2 lecture, 6 lab hours)

**V 116. Advanced Winery Practices (5)**

Prerequisite: V 115. Winery operations; quality control and production of specialty products; laboratory tests for aldehydes and esters, copper and iron, pasteurization and fining; microbiological techniques. (3 lecture, 6 lab hours)

**V 160. Winery Technology (3)**

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

**V 166. Vineyard Management (3)**

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

**V 170. Viticulture Seminar (1; max total 2)**

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

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

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

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

See *Regulations and Procedures—Independent Study*.

## SCHOOL OF ARTS AND SCIENCES

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# SCHOOL OF ARTS AND SCIENCES

Dale C. Burtner, Dean

Assistant Deans ..... A. Wayne Colver  
James H. Winter

<i>Department</i>	<i>Chairman</i>
Anthropology-Sociology .....	William C. Beatty, Jr.
Art .....	Frank B. Laury
Biology .....	Keith H. Woodwick
Chemistry .....	Richard P. Ciula
Economics .....	Robert A. Minick, Jr.
English .....	Robert S. Billings
Foreign Language .....	Edgar A. List
Geography .....	Chester F. Cole
Geology .....	C. Noble Beard
History .....	Jose C. Canales
Linguistics .....	Frederick H. Brengelman
Mathematics .....	Thomas C. Kipps
Music .....	Ralph C. Rea
Philosophy .....	Jack A. Pitt
Physical Education and Recreation .....	Cecil N. Coleman
Physics .....	Frederic A. Scott
Political Science .....	Karl E. Buckman
Psychology .....	Stanley E. Lindquist
Speech Arts .....	Phillip N. Walker

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 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-SOCIOLOGY DEPARTMENT

Professors: W. Beatty (Chairman), Dienststein, Wang

Assistant Professors: Kenyon, Mark, Njisane, Story, Weber

Lecturer: Hale

Part-time: Gaudin, Latham, Wren

The department offers majors for bachelor of arts degrees in anthropology and sociology and a combined sociology-anthropology minor for students majoring in other departments. The majors are 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 majors in anthropology and sociology. Reading knowledge of the language is emphasized. See the general statement in section on *Degrees and Credentials—Foreign Language Requirement* for equivalents and alternative ways of meeting the requirement.

## MAJORS

The following degree major requirements are in addition to the general education requirement in social science.

<b>Anthropology</b>	<i>Units</i>
Anthro 1, 2, 104, 115, Soc 153.....	15
Anthropology electives (ud).....	12
Elect from: Soc 152, 155, 157, 175.....	6
Elementary statistics; Ling 135, Biol 120.....	10
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*Additional Requirements: Soc 1A, Biol 1B.*

**Sociology**

Anthro 2, 104.....	6
Soc 1, 2 or 25, 153, 175, 176.....	15
Sociology electives (ud).....	18
	—
	39

## MINOR

The following minor requirements are in addition to the general education requirement in social science.

**Sociology-Anthropology**

Elect one group: Anthro 1, 2, 104; or Soc 1, 2, and 3 units sociology (ud) .....	9
Electives in anthropology and sociology (ud).....	9
	—
	18

## CREDENTIAL PROGRAM

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

*Courses***ANTHROPOLOGY****1. Introduction to Physical Anthropology (3)**

May not be used to meet general education requirements in social science. Relation of man and the animals; evolution of man, fossil man, race and racial classification; racial theories.

**2. Introduction to Cultural Anthropology (3)**

The nature of culture; culture growth and history; survey of cultural phenomena; cultural theory; applied anthropology.

**102. Ethnology (3)**

Prerequisite: Anthro 2 or permission of instructor. Major theories of culture; survey of culture types and their distribution; ethnological problems.

**103. Acculturation (3)**

Prerequisite: Anthro 2 or permission of instructor. Impact of western civilization upon nonwestern societies; social and cultural adjustments to impact; disintegration; reinterpretation, and reintegration; place of anthropology in international relations and colonial administration.

**104. Social Anthropology (3)**

Prerequisite: Anthro 2 or permission of instructor. The place of anthropology in the social sciences; theories and schools in social anthropology; community studies, integration, functionalism, psychological aspects.

**109. History and Theory of Archeology (3)**

Prerequisite: Anthro 1 or permission of instructor. Development of archeology; theoretical background and basis.

**110. Archeological Methods (3)**

Prerequisite: Anthro 1, 2, 109, or permission of instructor. Practical work on excavation; use of various instruments employed by excavator; keeping field records; dating methods. (1 lecture, 4 lab hours)

**112. Comparative Societies and Social Organizations (3)**

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.

**X 114. Culture and Personality (3)**

Prerequisite: Anthro 2 or 6 units of sociology, social welfare, or psychology; permission of instructor. Cross-cultural range in variation of personality and its theoretical implications; process of cultural and social conditioning in personality development; enculturation and motivation theories; ethno-science.

**115. Method and Theory in Cultural Anthropology (3)**

Prerequisite: Anthro 2, 104. Reading and analysis of major contributions to cultural anthropological thought.

**120. The American Indian (3) (Former Anthro 105)**

Prerequisite: Anthro 2 or permission of instructor. Prehistory of western hemisphere; linguistic groups; development, spread, and attainments of native Indian cultures.

**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. History and culture of Southeast Asia from earliest times to the present.

**124. Civilizations of East Asia (3) (Former Anthro 108)**

Prerequisite: permission of instructor. History and cultures of China, Japan, and Korea from earliest times to the present.

**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.

**SOCIOLOGY****1. Principles of Sociology (3)**

Basic principles and concepts of sociology, including personality, social structures and groupings, social processes, and social change.

**2. Social Problems in America (3)**

Prerequisite: Soc 1. Analysis of conditions in American society regarded as disruptive of the social order and subject to remedial action.

**25. Sociological Analysis (3)**

Prerequisite: Soc 1. Application of elementary research procedures to basic sociological concepts; interpretation of charts, graphs, and other statistical measures used in sociological literature. (Recommended for credential candidates in sociology.)

**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 and Mass Culture (3)**

Prerequisite: Soc 1 or permission of instructor. Unstable social collectives; crowds, audiences, mobs and popular movements; processes of dissemination of rumors, rise and decline of popular tastes, manipulation of sentiment, tension release in modern society.

**130. Selected Contemporary Social Issues (3)**

Units cannot be applied to the sociology major or minor. Study in depth of technological militarism, cybernation, and human rights (The Triple Revolution).

**145. Social Organization (3)**

Prerequisite: Soc 1 or permission of instructor. Significant types of organizations in American society; their place in the social system, organizational structure, internal processes.

**147. Medical Sociology (3)**

X Prerequisite: Soc 1 or permission of instructor. Analysis of the social and cultural dimensions of health, sickness, and organized medical care.

**151. Social Stratification and Mobility (3)**

Prerequisite: Soc 1 or permission of instructor. Classic and recent studies of social class and mobility, critical analysis of research methods; social class and mobility aspirations of the individual in society.

**152. History of Social Thought (3)**

Prerequisite: Soc 1 or permission of instructor. Leading social thinkers of the Western World from Plato to Comte; comparative study of social philosophers of the East.

**153 Contemporary Sociological Theories (3)**

Prerequisite: Soc 1 and either Soc 2 or 25 and Soc 152, or permission of instructor. Contemporary sociological theories; analytical, social action, and functional theories, conceptualization and theory construction.

**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. Social dynamics; factors and forces underlying social change; process of social change; direction of social change.

**159. Sociology of Religion (3)**

Prerequisite: Soc 1 or permission of instructor. Examination of the relationship between the sacred and the secular; functioning of religious values, practices, and organization in society.

**161. Population (3)**

Prerequisite: Soc 1 or permission of instructor. Population distribution, density, growth; age, sex, ethnic composition; population theories; impact of population changes on modern society.

**162. Social Psychology (3)**

Not open to students with credit in Psych 145. Prerequisite: Soc 1 or permission of instructor. Relation of the individual to his sociocultural environment, with special reference to personality development, interpersonal role behavior, and social control.

**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.

**165. The Family (3)**

Prerequisite: Soc 1 or permission of instructor. Nature, historical development, and contemporary trends of the modern family.

X

**175. Sociological Research Methods (3)**

Prerequisite: Soc 1 and either Soc 2 or 25 plus 9 upper division units in sociology or anthropology or permission of instructor. Methods in sociological-anthropological research.

**176. Advanced Sociological Research Methods (3)**

Prerequisite: Soc 175 and at least one course in statistics. Systematic exploration of survey research methods; application of general methodological principles to the particular operating context of a survey.

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

See *Regulations and Procedures—Independent Study*.

**ART DEPARTMENT**

Professor: Musselman

Associate Professors: Laury (Chairman), Aiken, W. Williams

Assistant Professors: R. Delaney, Kusel, Lund, Maughelli, McDougall, Minschew, Oppen, Smalley, G. Thompson

Part-time: Beeching, Bertoldi, Gomas, Greer, Hopper, McCoon, Moore, Odorfer, Ollikkala, Patnaude, C. Renzi

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 Schedule of Courses 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) and presentation of a satisfactory portfolio. 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 see the sections on *Public School Credentials* and the *School of Education*.

**MASTER OF ARTS DEGREE**

The graduate program for the master of arts degree in art is based on the equivalent of the undergraduate major at Fresno State College. 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.

**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 (4) (Former Art 119, to 12th Century)**

One unit may be applied toward the general education written composition requirement but may not be applied on major, minor, or credential. Art history from prehistoric times to the 12th century. Assigned writing will consist of a minimum of 3,000 words. (6 lecture-lab hours, plus 1 hour arranged)

**6. History of Art II (4) (Former Art 119, since 12th Century)**

One unit may be applied toward the general education written composition requirement but may not be applied on major, minor, or credential. Art history from the 12th century to the present. Assigned writing will consist of a minimum of 3,000 words. (6 lecture-lab hours, 1 hour arranged)

**20T. Studio Processes (3; max total see below)**

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. Sections designated for basic studio processes may include painting, ceramics, sculpture, photography, drawing, design, lettering, crafts, and printmaking. (6 lecture-lab hours)

**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 \$75.

**105T. Topics in Art History (4; max total see below)**

Corresponding areas not open to students with credit in Art 119. May be repeated for credit in different areas. One unit may be applied toward the general education written composition requirement but may not be applied on the major, minor, or credential. Prerequisite: permission of instructor. Topics may include Renaissance, Pre-Columbian, American, 19th century, 20th century, and Oriental art. Assigned writing will consist of a minimum of 3,000 words. (6 lecture-lab hours, 1 hour arranged)

**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 including areas offered in Art 20T; special sections in methods for elementary and secondary schools. (6 lecture-lab hours)

**160. Art Tours (3; max total see below)**

May be repeated for credit by nonmajors. Prerequisite Art 60 or 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 \$75.

**180. Design in the Theatre (3) (See Drama 180)****190. Independent Study (1-3); max see reference)**

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

**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*.

**299. Thesis or Project (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 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.*

**343. Contemporary Approaches in Art (1; max total 3)**

**BIOLOGY DEPARTMENT**

Professors: Woodwick (Chairman), J. Carr, D. Falk, Hadsall, Hawbecker, McClintic, Rees, Staebler

Associate Professors: Arce, Burdick, R. L. Evans, Latimer, P. Smith, Standing, Weiler

Assistant Professors: Daubs, Harmon, Hsu, Meyer, Pigg, Tribbey

Part-time: N. Evans, Hansen, Hewlett, Hoy, Isaak, L. Smith

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 chairman of 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 2A. 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**

Two years of satisfactory collegiate study (or equivalent) in one foreign language are 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 36 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 120 .....	3
Field course in biological science (see below).....	3
Biological science electives (incl 7 units in botany and 7 units in zoology-entomology-physiology) .....	24-28
	40

*Additional Requirements:* 12 units physical science including chemistry and physics. (Recommended: Chem 2A-B, 8, 109; Physics 2A-B; Geol 1.) See foreign language requirement.

*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 120 .....	3
Biological science electives.....	6
Botany electives (ud).....	22
	36

*Additional Requirements:* Zool 1; Chem (incl organic) 8-9 un; Physics 2A-B or Phy Sc 10. Recommended: a course in statistics or philosophy of science. See foreign language requirement.

<b>Microbiology Major for BA</b>	
Micrb 104, 117, 118, 161, 185, 189 .....	26
Approved biological science electives.....	6
	32

*Additional Requirements:* Biol 1A or Bot 1; Chem 1A-B, 28, 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 120 .....	3
Approved biological science electives (at least 6 units zoology-entomology-physiology) .....	12
	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.

**Microbiology Major for BS**

	<i>Units</i>
Mcrb 104, 117, 118, 185 .....	18
Chem 152 .....	4
Physio 1 .....	4
Zool 1, 108, 157, 158.....	16
	<hr/> 42

*Additional Requirements:* Biol 1A; Chem 2A-B, 8, 105, 109, 150, 151.

**SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF ARTS DEGREE MAJORS**

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-17 units per semester. A total of 124 units must be completed for the bachelor of arts degree. Electives may include minor and credential requirements. (See *Degrees and Credentials*.)

**Biology**

1st Year: Chem 2A-B, Bot 1, F Lang

2nd Year: Physics 2A, Zool 1, F Lang

(Recommended: Geol 1, Chem 8, Physics 2B)

3rd & 4th Years:

Biol 120; complete major requirements

(Recommended: Chem 109)

**Botany**

1st Year: Bot 1, Zool 1, Chem 1A or 2A-B, F Lang

2nd Year: Physics 2A-B or Phy Sc 10, Chem 8, F Lang

3rd & 4th Years:

Complete upper division botany courses, Biol 120, Biol Sc electives

**Microbiology**

1st Year: Bot 1 or Biol 1A, Chem 1A-B, F Lang

2nd Year: Mcrb 104, Chem 28, 109, 128, F Lang, Physics 2A-B

3rd & 4th Years:

Mcrb 117, 118, 161, 185, 189, Chem 105, Biol Sc electives

**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 Ent 101 or Zool 114, F Lang, statistics, Zool 160, 164

**SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE MAJORS**

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

**Microbiology**

1st Year: Zool 1, Biol 1A, Chem 2A-B

2nd Year: Mcrb 104, Zool 108, Chem 8, 109, Physio 1

3rd & 4th Years:

Mcrb 117, 118, 185, Zool 157, 158, Chem 105, 150, 151, 152

**BIOLOGY MINOR**

The biology minor consists of 20 units of which 6 must be upper division.

	<i>Units</i>
Biol 1A-B or 2A-B .....	6
Biol 112 or an approved field course (see below) .....	3
Biological science elective (3 units u.d.) .....	11
	20

*Approved Field Courses:* Biol 112, 133, 208, Bot 106, 107, Ent 101, Zool 113, 114, 134, 135, 137, 138, 140, 165.

*Additional Requirements:* physical science including chemistry and physics. (Recommended: high school chemistry or Chem 2A-B; high school physics or Phys Sc 10.)

**CREDENTIAL PROGRAM**

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

**MASTER OF ARTS DEGREES**

The Biology Department offers master of arts degrees in biology and microbiology. For microbiology, consult the department graduate adviser. The graduate program for the master of arts degree in biology is based on the equivalent of a Fresno State College undergraduate major in biology, botany, microbiology, or zoology. Eighteen of the 30 units required for the degree must be in biological science and must include Biol 200 or 206. For specific requirements consult the department graduate adviser; for general requirements see *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 requires the passing of an examination demonstrating the ability to read materials of the major in one appropriate foreign language.

*Courses***BIOLOGY**

*Note: College biology equivalents include Biol 1A or Bot 1 and Biol 1B or Zool 1; Biol 2A-B.*

**1A. Plant Biology (3)**

Not open to students with credit in Biol 2A or Bot 1. Structure, function, ecology, and economic study of plants including heredity and evolution. (2 lecture, 2 lab hours)

**1B. Animal Biology (3)**

Not open to students with credit in Biol 2A or Zool 1. Structure, function, ecology and economic study of animals; physiology as applied to man. (2 lecture, 2 lab hours)

**2A. Life Science (3)**

Not open to students with credit in Biol 1A, 1B, Bot 1 or Zool 1. Principles of biology related to the cell, maintenance, and relation of living organisms, heredity and elementary processes of evolution. (2 lecture, 2 lab hours)

**2B. Life Science (3)**

Prerequisite: Biol 2A. Principles of biology related to reproduction, mechanisms of evolution, diversity of life, populations and communities, biogeography, history of life. (2 lecture, 2 lab hours)

**66. General Human Anatomy (3)**

Recommended: an introductory college biology course. Structure of the human body. (2 lecture, 3 lab hours)

**101. Nature Study (2)**

Concurrently with Biol 102. Prerequisite: 9 units of natural science including a 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: Biol 1A-B, 2A-B or equivalent. Local environmental and biotic interdependencies. (2 lecture, 3 lab or field hours)

**116. Microscopic Technique (3)**

Prerequisite: 3 units of biology. Preparation of plant and animal tissues for microscopic study. (9 lab 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)

**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)

**151. Heredity and Evolution (3)**

Not open to students with credit in Zool 175 or Biol 120. Prerequisite: Biol 1B, 2A-B or equivalent. Heredity of man and principles of organic change.

**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)

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

**200. Principles and Great Experiments in Biology (2)**

Development and influence of current biological thought.

**204. Biology of Speciation (2)**

Prerequisite: 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)

**255. Topics in Botany (2; max total 6)**

Prerequisite: permission of instructor. Investigation of selected areas in the field of botany.

**258. Experimental Virology (3)**

Prerequisite: permission of instructor. Experimental procedures used in bacteriophage and animal virus research; collection, interpretation and presentation of data.

**259. Experimental Infectious Pathology (3)**

Prerequisite: permission of instructor. The production and study of tissue changes resulting from infection with pathogenic microorganisms.

**260. Topics in Microbiology (2; max total 6)**

Prerequisite: permission of instructor. Intensive investigation of selected areas in microbiology.

**265. Topics in Physiology (2; max total 6)**

Prerequisite: permission of instructor. Investigation of selected areas in the field of physiology.

**270. Topics in Zoology (2; max total 6)**

Prerequisite: permission of instructor. Investigation of new fields, areas not in current courses, or advanced studies in a given area; topics may include animal behavior, taxonomic methodology, taxonomy of immature insects, experimental embryology.

**281. Seminar in Biological Science (1; max see below)**

Maximum total credit 5 units; not more than 2 units in each field. Prerequisite: one of the majors in the Biology Department. Reviews and reports on recent literature and problems in biology, botany, entomology, microbiology, and zoology.

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

See *Regulations and Procedures—Independent Study*.

**299. Thesis (2-4; max total 4)**

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

**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**

*Note: College botany equivalents include Bot 1, Biol 1A, Biol 2A-B.*

**1. General Botany (5)**

Not open to students with credit in Biol 1A. Prerequisite to most upper division botany courses. Fundamentals of structure and function in seed plants; survey of plant kingdom. (3 lecture, 6 lab hours)

**104. Plant Physiology (4)**

Prerequisite: 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)

**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 Biol 1A. 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 Ag 106)****107. Medical Entomology (3)**

Prerequisite: junior standing. Arthropod-borne diseases of man and animals and arthropod vectors of the diseases.

**107L. Medical Entomology Laboratory (1)**

Prerequisite or concurrently: Ent 107. (3 lab hours)

**110. Insect Physiology (3)**

Prerequisite: Ent 101. Principles of physiology as applied to insects; functions of insect body, tissues, and organs. (2 lecture, 3 lab or demonstration hours)

**115. Insect Morphology (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—Biol 1A, 2A-B, Bot 1 or Physio 1. General survey of the field of microbiology; principles and selected practical applications. (2 lecture, 6 lab hours)

**104. Microbiology (5)**

For majors. Prerequisite: organic chemistry; Biol 1A or Bot 1. Morphological and physiological consideration of the Schizomycetes and selected unicellular Eumyces; techniques. illustration of principles, and determinative bacteriology in the laboratory. (3 lecture, 6 lab hours)

**117. Serology and Immunology (4)**

Prerequisite: Mrcb 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: Mrcb 104, 117, Chem 8. Bacterial, mycotic and viral etiological agents of human disease. (3 lecture, 6 lab hours)

**150. Medical Mycology (4)**

Prerequisite: Biol 1A or Bot 1 and Mrcb 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: Mrcb 104, Chem 8. Structure and physiological functions in the bacterial cell. (2 lecture, 6 lab hours)

**185. Virology (4)**

Prerequisite: permission of instructor. Biological and chemical aspects of viruses. Technique 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*.

**200 series.** Graduate courses are listed under *Biology*.

**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)

**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**

*Note: College zoology equivalents include Zool 1, Biol 1B, Biol 2A-B.*

**1. General Zoology (5)**

Not open to students with credit in Biol 1B. Prerequisite to most upper division courses in zoology. Survey of major phyla and principles of animal biology. (3 lecture, 6 lab hours)

**103. Vertebrate Zoology (3)**

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, permission of instructor. Vertebrate classes; natural history of local species. (3 lecture, 3 lab or field hours)

**114. Advanced Invertebrates (3)**

Prerequisite: college zoology. Invertebrates exclusive of insects, parasitic protozoa and helminths. (2 lecture, 3 lab or field hours)

**134. Wildlife Management (3)**

Prerequisite: college zoology. Relation of vertebrates to human affairs. (2 lecture, 3 lab or field hours)

**135. Mammalogy (4)**

Prerequisite: college zoology. Mammals of the world with emphasis on local species. (3 lecture, 3 lab or field hours)

**137. Herpetology (4)**

Prerequisite: college zoology, 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 (4)**

Prerequisite: college zoology, permission of instructor. Identification, natural history, distribution, ecology, and management of fishes; freshwater fishes of California, native and introduced. (3 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. Elementary Hematology (3)**

Prerequisite: Physio 1 or Zool 157. Identification of blood cells and practice in hematological procedures. (1 lecture, 6 lab hours)

**160. Comparative Embryology of Vertebrates (4)**

Prerequisite: 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: college zoology, permission of instructor. Introduction to the identification and natural history of birds with emphasis on local species. (3 lecture, 3 lab or field hours)

**175. Vertebrate Evolution (2)**

Prerequisite: Biol 120 and a vertebrate field course. The course of evolution of the higher vertebrates including present concepts of speciation.

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

See *Regulations and Procedures—Independent Study*.

**200 series.** Graduate courses are listed under *Biology*.

**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 (3)**

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**

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

**281. Advanced Studies in the Marine Sciences (3)**

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.

**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: Biggerstaff, Bremner, Clark, Kallo, Kauffman

Associate Professors: Ciula (Chairman), Bluestone, W. Miller, K. Russell, Vavoulis

Assistant Professors: Gigliotti, Gump, Kunimitsu, Rodemeyer

Part-time: Bhatnagar, Khatri, Koligian

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 and 61, or equivalent, are 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 .....		45
Chemistry Major .....		36-37
Chem 1A-B or 4A-B-C, 6, 28, 29, 106, 110A-B, 111A-B, 128, 129		
Additional Requirements .....		20
Math 75, 76, 77, Physics 2A-B		
Electives .....		22-23
Recommended: Chem 99		
		124

<b>BACHELOR OF SCIENCE DEGREE IN CHEMISTRY</b>		
General Education .....		45
Chemistry Major .....		45-46
Chem 1A-B or 4A-B-C, 6, 28, 29, 106, 110A-B, 111A-B, 123, 128, 129		
Elect 6 units from: Chem 115, 124, 126, 130, 140T, 155, 160, 190 (3 un) or a 200 course		
Additional Requirements .....		29
German 61, Math 75, 76, 77, Physics 4A-B-C		
Physics 102 or other approved u.d. physics or mathematics course		
Electives .....		8-9
German 1A-B or equivalent required if not taken in high school		
Recommended: Chem 99		
		128

#### MINOR

A minor in chemistry for a bachelor's degree requires 19 to 24 units, of which 6 are upper division.

Chem 1A-B or 4A-B-C; or 2A-B and 101; or 2A-B and 150, 151, 152 .....	9-15
Chem 8, 105, 109 .....	10
	19-25

#### 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 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.

**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 or Math 28 (concurrently). Composition of matter and physical and chemical changes; fundamental laws and principles; atomic and molecular structure, qualitative and quantitative techniques; introduction to organic chemistry and biochemistry. (2 lecture, 3 lab hours)

**4A. General Chemistry (4)**

Not open to students with credit in Chem 2A-B and 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)

**105. Quantitative Analysis (4)**

Not open to chemistry majors. Prerequisite: Chem 1B or 4C or 2A-B. Rapid coverage of principles and methods of volumetric and gravimetric analysis. (2 lecture, 6 lab hours)

**106. Analytical Chemistry (4)**

Prerequisite: Chem 110A, 111A; concurrently Chem 110B, 111B. 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 6 or 105, 8 or 28; Physics 4A and B or C, or 2A-B; Math 77. Fundamental laws and theories.

**111A-B. Physical Chemical Measurements (1-2)**

Accompanies Chem 110A-B. (3 or 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, 111A; concurrently 110B, 111B. 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)

**126. Instrumental Methods of Analysis (3)**

Prerequisite: Chem 110A, 111A (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)

**152. Clinical Biochemistry (4) (Former Chem 150B)**

Prerequisite: Chem 150, 151. Clinical laboratory methods of analysis of tissues and body fluids and their diagnostic value. (2 lecture, 6 lab hours)

**155. Fundamentals of Biochemistry (3)**

Primarily for chemistry majors. Prerequisite: Chem 110B, 111B (or concurrently); 128, 129. Structure, function, and metabolism of chemical entities in living systems.

**156. Biochemical Laboratory Techniques (3)**

Prerequisite: Chem 155 (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*)

**211. Chemical Thermodynamics (3)**

Prerequisite: Chem 110A-B, 111A-B. Principles of thermodynamics; application to chemical problems; introduction to statistical methods, calculation of thermodynamic functions from spectroscopic data.

**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, 111A-B. 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 emphasizing structural theory and mechanism of reactions with references to current literature.

**250T. 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*.

**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.

## ECONOMICS DEPARTMENT

Professors: K. Falk, Mullennix

Associate Professors: Minick (Chairman), Bush, Spangler

Assistant Professors: Allison, Auchter, J. Shaw, Taniguchi

Lecturer: Cypher, Haehl, Pisciotoli

Part-time: Reeder

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*)

**Foreign Language or Mathematics Requirement**

The student must complete two years of satisfactory collegiate study or equivalent of one foreign language *or* a 14-unit mathematics sequence arranged with his economics adviser. Any student planning advanced study is advised also to meet the foreign language requirement of the school he plans to attend.

**ECONOMICS MAJOR**

The following bachelor of arts degree 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.

	<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
	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
	18

**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 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.

### Foreign Language Requirement

Advancement to candidacy for the master of arts degree with a major in economics requires the passing of an examination demonstrating the ability to read materials of the major in one appropriate foreign language.

### 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.

##### 102. Contemporary Economic Problems (3; max total 6)

Prerequisite: upper division standing and permission of instructor. Analysis of economic problems and issues which are of public interest and importance at the time the course is given.

##### 103. Economic Fluctuations (3)

Prerequisite: Econ 1A-B; senior standing or permission of instructor. Cyclical movements of business; history, characteristics and measurement; critical examination of business cycle theories and of proposals for reducing economic fluctuations.

##### 110. Economic History of the United States (3)

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 and permission of instructor. Survey and analysis of developmental problems of emergent economies.

**119. Regional Economic Analysis (3)**

Prerequisite: Econ 1A-B; Econ 100A or 100B. 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. 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, 100B, 135, 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, 100A or B; or permission of instructor. Alternative theories of wages, employment and structure of labor market; impact of collective bargaining on level of wages, employment and labor's share of national income; history and philosophies of labor movement, structure and functioning of labor unions.

**151. History of Labor in the United States (3)**

Prerequisite: Econ 150 or permission of instructor. Analytical topics from historical viewpoint; evolution of unions and labor legislation interpreted in terms of economic theory.

**170. Transportation (3)**

Prerequisite: Econ 1A-B. Economics of rail, water, motor, air, and pipeline transportation.

**174. Government Regulation of Economic Activity (3)**

Prerequisite: Econ 100A or permission of instructor. Justification for regulation, constitutional limitations, public utility regulation, regulation of monopoly; competitive practices; government policy in other areas of economic activity.

**178. International Economics (3)**

Prerequisite: Econ 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 100A or B or permission of instructor. Comparative study of economic systems of the modern world; capitalism, socialism, communism, fascism, and the problems which arise within each.

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

*Note: Econ 100A, 100B, and 135 are prerequisite to all graduate courses.*

**200. Seminar in Research Methodology (3)**

Development and verification of hypotheses in economics; quantitative techniques.

**201. Seminar in Economic Theory (3; max total 6)**

Advanced topics in economic theory.

**210. Seminar in Economic History of United States (3; max total 6)**

Prerequisite: Econ 110 or permission of instructor. Critical examination of, and reports on, selected topics in the economic history of the United States.

**231. Seminar in Public Finance (3)**

Prerequisite: Econ 131. Advanced topics central to governmental expenditure, borrowing, and revenue collection.

**236. Seminar in Monetary Theory (3)**

Prerequisite: Econ 136 or permission of instructor. Advanced topics, reports, and critical examination of alternative theories and approaches to the study of money.

**250. Seminar in Labor Economics (3)**

Prerequisite: Econ 150 or permission of instructor. Advanced topics in wage and employment theory, philosophies of trade unionism, impact of collective bargaining on the modern industrial society.

**278. Seminar in International Economics (3)**

Prerequisite: Econ 178. Advanced topics in international economic theory, foreign exchanges, foreign investment, tariffs and international economics and economic development.

**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.

## ENGLISH DEPARTMENT

Professors: Larrabee, Leavenworth, Lyon

Associate Professors: Billings (Chairman), Bluestein, Chittick, Everwine, Levine, Logan, O'Neil, Poss, Zumwalt

Assistant Professors: W. Cowling, Faderman, Garrigus, Gatten, Geerdes, Hanzlicek, Hart, Karr, Kausch, McKnight, Mezey, Migdal, Page, M. Paul, Ries, J. Stewart, W. Stuart, Weihs

Instructor: Butler

Part-time: Elder, Greenaway, Seastrom, R. Terry

The English Department offers a major in literature and language 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, literature, and linguistics. Tutorial hours are announced in the *Schedule of Courses*.

**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 24 upper division units, including at least one course in English 193T, 194T, or Linguistics 140T. 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.

The courses listed below indicate the general approach to be taken in respect to a body of material. Consult the *Schedule of Courses* for the specific content of any section.

**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 ARTS DEGREE**

The graduate program for the master of arts degree in English is based on the equivalent of the undergraduate major at Fresno State College. The master of arts degree in linguistics is open to students with undergraduate majors in foreign language, English, anthropology, psychology, philosophy, mathematics, or 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 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 1 or 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.

*Courses***ENGLISH****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.

**6. Improvement in Reading Techniques (2)**

Recommended for students who wish to improve their reading speed and comprehension. Analysis of reading habits; practice in efficient methods of reading and studying.

**20. Literature and Composition (3)**

Prerequisite: Engl 1 or equivalent. Reading and analysis of short stories, novels, drama, and poetry. Extensive writing based on the readings.

**40T. Writing (4; max total 8 if no topic repeated) (Former Engl 4, 10, 11)**

Prerequisite: Engl 1, 20, or permission of instructor. Sections designated as emphasizing poetry, fiction, or essay 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.

**134. Structure of English (4) (See Ling 134)****135. General Linguistics (4) (See Ling 135)****137. American English (3) (Former Ling 131; see Ling 137)****138. History of the English Language (3) (See Ling 138)****149T. Advanced Writing (4; max 8 in one form, max total 12) (Former Engl 110, 111, 120)**

Prerequisite: Engl 40T or permission of instructor. Sections designated as emphasizing poetry, fiction, or essay writing; appropriate readings and analyses.

**159T. Literary History (4; max total 16 if no topic repeated) (Former Engl 100-105, 180-182)**

Prerequisite: Engl 20 or equivalent. Sections designated as to period and nationality. Discussion and written analysis of major works and their backgrounds within approximately a century's scope.

**169T. Forms of Literature (4; max total 12 if no topic repeated) (Former Engl 93)**

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.

**190. Independent Study (1-4; max see reference)**

*See Regulations and Procedures—Independent Study.*

**193T. Seminar in Literary Studies (4; max total 12 if no topic repeated) (Former Engl 140-145, 182, 185)**

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.

**194T. Major Writers (4; max total 12 if no topic repeated) (Former Engl 160, 162A-B, 165. If Shakespeare, same as Drama 194T)**

Studies and written analysis of the major works of a particular writer or a set of writers; Shakespeare, Chaucer, and Milton will be standard offerings in designated sections.

**195. Senior Reading (4)**

Reading in literature from a list prepared by the instructor in consultation with the student. Interpretative and analytical writing.

**196. Senior Thesis (1-4; max total 4)**

For seniors planning to obtain a master's degree in English. Writing an extended paper.

#### GRADUATE COURSES

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

**200A-B. Graduate Survey (4-4)**

Open only to second-semester seniors and graduates majoring in English. Extensive, individually directed readings in literature and related subjects.

**210T. Seminar in Writing (4; max total 12, 8 max total in one area)**

Prerequisite: permission of instructor. Advanced individual projects in writing; enrollments will be designated in poetry and fiction.

**220T. Seminar in Rhetoric (4; max total 12 if no topic repeated)**

Prerequisite: advanced composition or equivalent. Seminar in rhetorical theory in relation to social history; critical analysis of current rhetorical doctrine.

**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.

**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.

**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.*

**300. English Colloquium (2; max total 6)**

## FOREIGN LANGUAGE DEPARTMENT

Professors: Bird, Brenninger

Associate Professors: List (Chairman), Elgorriaga, Ensslin, Jasutis, L. Lewis, Nagy, Pella

Assistant Professors: W. Bowen, Carnero, Cohee, Dmitriew, Doswald, Kinzel, McConnell, Poythress, Pronin, H. Roth, Tagliabue, Tucker

Part-time: M. Bowen, L. Costa, Ferrer, Harrell, A. Kusel, Peal, Petrosino, Proudian, Ripol

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.

<b>MAJORS</b>		<i>Units</i>
<b>French</b>		
Fr 101, 102, 109A-B, 112A-B .....		18
French electives (ud) .....		9
		—
		27
<b>German</b>		
Germ 101 (4 units), 102 (4 units), 115A-B, 116A-B .....		20
German electives (ud) .....		6
		—
		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
<b>MINORS</b>		
<b>French</b>		
Fr 2A-B .....		0-6
Fr 50A-B, 101, 102, 137 .....		13
Elect from: Fr 109A-B, 112A-B .....		9-3
		—
		22

	<i>Units</i>
<b>German</b>	
Germ 2A-B .....	0- 6
Germ 50A-B, 101 (4 un), 137 .....	11
Elect from: Germ 101, 115A-B, 116A-B .....	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 see the sections on *Public School Credentials* and the *School of Education*.

#### MASTER OF ARTS DEGREE

The master of arts degree in foreign language 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.

#### *Courses*

#### FOREIGN LANGUAGE

##### 130A. Foreign Language in the Public School (3; max total see below)

May be taken for credit once in each language except Spanish. Open to secondary school student teachers. Intensive drill on phonetics for pronunciation, enunciation, intonation. (3 lecture, 1 lab hour).

##### 130B. Foreign Language in the Elementary School (3)

Methods, materials, bibliography for teaching foreign language in the elementary school.

#### GRADUATE COURSES

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

##### 125G. Foreign Language for Graduate Students (2)

Prerequisite: Fr, Germ, Russ, or Span 1B or permission of instructor. Intensive reading and grammar review to prepare master's degree candidates for language examination in their fields.

**200. Research Methods and Bibliography (2)**

Prerequisite: bachelor's degree in a foreign language or permission of instructor. Seminar in techniques of research; individual study, preparation of materials and their use for documentation in the language of specialization.

**201. Foreign Language Linguistics (2; max total 4 if no language repeated) (Same as Ling 201)**

Prerequisite: Latin 1B; major or minor in language of specialization; permission of instructor. Oppositions in language; phonetic and phonemic description; allophonic and phonemic perturbations; speech levels; dialects.

**202. Seminar in Historical Linguistics (2; max total 4 if no language repeated) (Same as Ling 202)**

Prerequisite: Latin 1B; major or minor in language of specialization; permission of instructor. Historical method; diachronic and synchronic considerations; language change; articulatory oppositions; Latin phonology and distributions; morphology, syntax; dialects; comparison with other Romance languages.

**210. Seminar in Literary Studies (3; max total 12 if no topic repeated)**

Prerequisite: equivalent of undergraduate major in language of specialization. Seminar in critique and analytical study of selected topics, periods, or specific literary figures.

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

See *Regulations and Procedures—Independent Study*.

**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.*

**301. Conversation and Composition Review (2; max total 8 if no language repeated)****304. Theory and Practice (2; max total 8)****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: Fr 1B or two years of high school French. Grammar review; modern short stories or plays. Sight reading; weekly compositions; outside reading and reports. (B) Prerequisite: Fr 2A or three years of high school French. French civilization; selected poems, prose or dramatic works and one novel by French men of letters. Class discussion; occasional compositions; sight reading. Conducted in French.

**50A-B. Oral French (2-2)**

Prerequisite: Fr 1B; 2A or 2B (must be taken concurrently). Oral drill for pronunciation; conversation on assigned topics; brief talks; extemporaneous discussions. (2 lecture, 1 lab hour)

**101. Advanced Composition and Conversation (3)**

Prerequisite: Fr 2B 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: Fr 101 or permission of instructor. Required for major. 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. French Literature, Earlier Period (3-3)**

Prerequisite: Fr 2B. History of French literature, principal documents and authors from Chanson de Roland to André Chenier; renaissance, seventeenth and eighteenth centuries. Lectures and discussions; one paper each semester.

**112A-B. French Literature, Nineteenth Century (3-3)**

Prerequisite: Fr 2B. Chief movements, works and authors from 1789 to the present; Romanticism, Realism, the Parnasse, Naturalism and Symbolism. Lectures and discussions; one paper each semester.

**118A-B. Twentieth Century Literature (3-3)**

Prerequisite: Fr 2B or equivalent. Analytical and critical study of twentieth century literary production of France. Outside readings and one written report each semester.

**135. History of the French Language (3)**

Prerequisite: Lat 1B. History of the phonological, morphological, and syntactical developments of the French language from its origin to the present through the study of representative texts.

**137. Applied Linguistics (3)**

Prerequisite: Fr 101 (or concurrently); Ling 135. Phonological, morphological, syntactical, and lexical structure of French; conflicts with English structure; linguistics problems in design of teaching materials.

**160T. Selected Literary Topics (3; max total 9)**

Prerequisite: Fr 2B. 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*.

**200 series.** Graduate courses are listed under *Foreign Language*.

**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.

**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 into 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.

**115A-B. German Literature, Earlier Period (3-3)**

Prerequisite: Germ 2B. Reading and discussion of representative selections from the *Nibelungenlied*, Wolfram, Gottfried, Luther, Lessing, Goethe, Schiller.

**116A-B. Nineteenth Century Literature (3-3)**

Prerequisite: Germ 2B. Reading and discussion of representative selections from Tieck, Eichendorff, Hoffmann, Grimm, Kleist, Heine, Grillparzer, Keller, Hauptmann, Sudermann.

**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: Germ 2B. Development of the German language from earliest times to the present.

**137. Applied Linguistics (3)**

Prerequisite: Germ 101 (or concurrently); Ling 135. Phonological, morphological, syntactical, and lexical structure of German; conflicts with English structure; linguistic problems in design of teaching materials.

**160T. Selected Literary Topics (3; max total 9)**

Prerequisite: Germ 2B. Intensive study of significant topics through selected literary texts; analysis, discussion, and evaluation of specific genres, themes, movements, and literary problems.

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

See *Regulations and Procedures—Independent Study*.

**200 series.** Graduate courses are listed under *Foreign Language*.

## ITALIAN

**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, 2 lab hours)

**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

**1A-B. Elementary Latin (4-4)**

(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 (2-2)**

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.

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

See *Regulations and Procedures—Independent Study*.

## PORTUGUESE

**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, 2 lab hours)

**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****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)**

Prerequisite: Russ 2B or equivalent. 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 Chekhov, 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.

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

See *Regulations and Procedures—Independent Study*.

**SPANISH****1A-B. Elementary Spanish (4-4)**

Beginning course of graded lessons acquainting the student with the basic structure and pronunciation of Spanish through practice in speaking, reading, and writing. (4 lecture, 1 lab hour)

**2A-B. Intermediate Spanish (3-3)**

Prerequisite: Span 1B or two years of high school Spanish. (A) Review of grammar; tenses with emphasis upon subjunctive mood and irregular verbs; prose composition; reading of typical modern novels and plays. Outside and sight reading. (B) Composition; conversation; forms of correspondence; talks on Spanish civilization; modern prose and drama. Written report on private reading. Conducted in Spanish.

**3A-B. Intensive Conversation (3-3)**

For incoming freshmen with prior instruction in Spanish; admission by departmental placement test. Prepared and impromptu oral reports, class and group discussions; memorization and recitation of poems and short plays. (3 lecture, 1 lab hour)

**4A-B. Intensive Reading and Composition (3-3)**

For incoming freshmen with prior instruction in Spanish; admission by departmental placement test. Reading prose, poetical and dramatic works; 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)

**55A-B. Practical Conversation (2-2)**

Prerequisite: Span 1B or two or more years of high school Spanish. More advanced than Span 50A-B. Common idioms and correct usage; expression and gestures; practical vocabulary for daily life and travel. (2 lecture, 1 lab hour)

**101. Advanced Composition and Conversation (3)**

Prerequisite: Span 2B or permission of instructor. Weekly written assignments on varied topics with emphasis on style in composition; class conducted in Spanish.

**102. Hispanic Culture (3)**

Prerequisite: Span 101. Examination of cultural values of the Hispanic world through readings, lectures, films and other media. Weekly written and oral reports by students.

**103A-B. Spanish Literature (3-3)**

Prerequisite: Span 2B; 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 2B. (A) Colonial period: historical; epics of conquest; poetry of outstanding figures such as Sor Juana Inez and others; oral reports and discussion; one written report. (B) Republican period: novel, short story, and essay; special attention to poetry of *modernistas*; the Romantic poets; oral reports and discussion.

**105. Spanish-American Fiction of the Twentieth Century (3)**

Prerequisite: Span 104B. Intensive study of some of the outstanding Spanish-American novels and short stories of the twentieth century.

**106. Spanish Literature of the Golden Age (3)**

Prerequisite: Span 103A-B. 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. Intensive study of the works of some of the most outstanding Spanish-American poets of the twentieth century.

**108. Spanish Literature of the Twentieth Century (3) (Former F Lang 118)**

Prerequisite: Span 103A-B. 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 F Lang 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.

**132. Methods of Teaching Spanish in Elementary Schools (3)**

Not open to students with credit in F Lang 130B (Spanish). Not applicable on the Spanish major. Methods, materials, bibliography for Spanish in elementary schools.

**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.

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

See *Regulations and Procedures—Independent Study*.

**200 series:** Graduate courses are listed under *Foreign Language*.

## GEOGRAPHY DEPARTMENT

Professors: Cole (Chairman), Crosby, Ervin, Montgomery, Tokmakian  
 Associate Professor; Nasse  
 Assistant Professors: A. Johnson, R. Lee, Markham, Norsworthy, M. Stuart  
 Lecturer: Helle, Panditharatna  
 Part-time: Read

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 45 units of geography. See requirements listed below. For general degree requirements see *Degrees and Credentials*. Geography courses may not meet the social science general education requirement for geography majors. Two years of one foreign language are recommended for majors intending to do graduate work in geography.

GEOGRAPHY MAJOR	Units
I. Geog 3, 4, 7 .....	10
II. Elect from: Geog 103, 104, 105, 116, 120, 130, 177 .....	11
III. Elect from: Geog 111, 112, 115, 135T, 181 .....	5
IV. Elect from: Geog 5, 108, 109, 110, 171, 182 .....	6
Geography electives (ud) .....	13
	45

*Additional Requirements:* Introductory course in anthropology, economics, or sociology (may be applied on general education).

GEOGRAPHY MINOR	
Geography 3, 4, 7 .....	10
Geography electives .....	10
	20

## CREDENTIAL PROGRAM

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

**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 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.

**MASTER OF CITY AND REGIONAL PLANNING DEGREE**

The master's degree program in city and regional planning is a two-year professional course of study designed as preparation for careers in planning. The multidisciplinary approach explores the physical development problems and needs uniquely associated with this region with its medium-sized urban communities, rural areas, and their service centers.

The Geography Department offers the master of city and regional planning degree in cooperation with the Art, Economics, and Political Science Departments and the Schools of Business, Engineering, and Social Work. Additional details pertaining to the degree may be obtained from the Director of the Planning Program; 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.

*Courses***GEOGRAPHY**

*Note: Geography courses, except Geog 5 and 108, count as social science (not as physical science) in fulfillment of general education requirements.*

**3. Economic Geography (3)**

World distribution of significant commodities, their uses in cultures; agricultural and mineral resource patterns; regionalization of economic activity; implications for contemporary society.

**4. World Geography (3)**

Cultural and physical features; economic development; resources; man-land relationships. The approach is by continents and/or cultural regions.

**5. Meteorology (3)**

Weather analysis; factors basic to weather forecasting and climatological studies. (One 2-hour Saturday field trip required)

**7. Physical Geography (4)**

Basic principles and concepts of the elements of the physical environment. (3 lecture, 3 lab hours)

**103. Industrial Regions (3)**

Prerequisite: Geog 3, 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. Physical Climatology (3)**

Meteorological instruments and methods of investigation; use of climatological observations; application of climatological methods. Worldwide variations and interrelationships of simple and complex climatological elements. (2 lecture, 3 lab hours)

**108. Regional Climatology (3)**

Prerequisite: Geog 5 or equivalent. Climates of the earth and their significance to man.

**109. Natural Vegetation Regions of the World (3)**

Prerequisite: permission of instructor. Geographic character, distribution, and environmental relationships of natural vegetational features of the main land masses, land forms, and climatic regions of the world.

**110. Physiography of the United States (3)**

Prerequisite: Geol 1. Natural divisions of the United States based on surface features and their interrelationships.

**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.

**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.

**115. Cartography (3)**

Use of instruments for drafting and lettering of maps; construction and use of standard map projections; relief representation and map reproduction; cartographic source materials and literature; field trips.

**116. Political Geography (3)**

Power factors in international relations; concepts of space, resources, industry, agriculture, technology, population, and food supply; cultural groups related to states and their association.

**120. Urban Geography (3)**

The region as a geographic unit; urban settlements as regional centers; city-region relationships; morphology and structure of villages, towns and cities, and their internal functional relationships; case studies.

**124. Geography of the USSR (3)**

Regional distribution of resources and industries of the USSR.

**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. See *Schedule of Courses* for region to be considered in a given semester.

**129. Africa (3)**

Systematic survey of Africa; cultural and natural features related to economy of individual countries.

**130. Geographic Literature (2)**

Prerequisite: geography major or minor. Primary and secondary source materials; literary background of geography.

**135T. Tropics 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.

**140. Canada and Alaska (2)**

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.

**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. 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. Geography of Environment (3)**

Interactions of man and his environment; effects of man in altering the environment and some of the effects of the environment upon human activity.

**189. Geography of California (2)**

Natural and cultural patterns of California; historical and regional geography of the state.

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

**203. Seminar in Economic Geography (3)**

Prerequisite: Math 40, its equivalent, or permission of instructor. Theory, concepts, and methods in economic geography.

**205. Seminar in Regional Geography (3)**

Prerequisite: 9 units of upper division geography or permission of instructor. Theories of regional geography; method in regional delimitation; applied regional geography.

**206. Seminar in Physical Geography (3; max total 6 if no field repeated)**

Prerequisite: Geog 108, 110, or Geol 105. Principles, concepts, and theories in the systematic study of physical geography and its methodology. Each offering will be chosen from the fields of landforms, climate, water and soils, or natural vegetation.

**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.

**230. Contemporary Geographic Thought (3)**

Prerequisite: graduate standing or permission of instructor. Current theories of geography and their evolution.

**270. Seminar in Selected Regions (3; max total 6 if no region is repeated)**

Prerequisite: undergraduate course on 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.

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

See *Regulations and Procedures—Independent Study*.

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

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

**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)**

**PLANNING COURSES (PLAN)****200. Seminar in Urban and Regional Planning (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.

**201. Seminar in Planning Research (3)**

Program formulation; analytical methods as applied to land-use, transportation, housing, public facility and resource planning; theory of systems analysis and simulative models; application of techniques to problems and group projects.

**202. Seminar in Elements of Design (3)**

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.

**203. Practicum in Physical Design (3; max total 6)**

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 (2)**

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.

**280. Planning Internship (4)**

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 (2-6)**

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

## GEOLOGY DEPARTMENT

Professors: Beard (Chairman), Mack  
 Associate Professors: Blackerby, Cserna  
 Assistant Professors: Avent, Lange, White  
 Lecturer: Stamolis  
 Part-time: Naney

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 introductory course in geology meets a natural science requirement in general education; and courses for earth study as an avocation.

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 but not more than 40 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.

<b>Geology Major for BA Degree</b>	<i>Units</i>
Geol 1, 1L, 2, 12A-B, 101, 106A, 107, _____	27
Elect from upper division geology.....	10
	37

*Additional Requirements:* Biol 1A-B; 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 17 units. It is recommended that Geol 1, 1L, 2, 12A, 101, 105 and 189 be included in the minor.

**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*.

*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.

**12A-B. Mineralogy (3-2)**

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)

**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, 106. Field trips to introduce students to methods and instruments used in geologic field work; observation and description of geologic phenomena; written presentation of observed data. (6 lab hours, usually on week ends)

**108. Field Geology (6)**

Prerequisite: Geol 101, 107. Geologic reconnaissance and application of instrumental methods in geologic mapping and written report of area selected for study.

**109. General Oceanography (4)**

Prerequisite: college chemistry and biology, Geol 1. 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.)

**110. Paleontology (3)**

For geology and biology majors. Prerequisite: Geol 2, and either Biol 1B or Zool 1; or permission of instructor. Structures and development of prehistoric animals; invertebrates and index fossils. May include field trips. (2 lecture, 3 lab hours)

**111. Physical Stratigraphy (3)**

Prerequisite: Geol 2, 101, 106. Recommended: 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. May include field trips. (2 lecture, 3 lab hours)

**115. Ore Deposits (3)**

Prerequisite: Geol 101, 106, 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, 106. Theories of origin of petroleum, petroleum structures, prospecting, extraction methods; selected petroleum fields. May include field trips.

**117. Ground Water (2)**

Prerequisite: senior standing or permission of instructor. Geologic and hydrologic factors related to occurrence and utilization of ground water.

**120. Marine Geology (3)**

Prerequisite: Geol 1, 1L, 2. Geomorphology of the ocean basins; marine processes affecting coastal areas; economic resources of the oceans.

**124. Geochemistry (3)**

Prerequisite: Geol 101, one year of college chemistry. 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*)

**250T. Topics in Geology (3; max total 12 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.

## HISTORY DEPARTMENT

Professors: Canales (Chairman), G. Cobb, Nelsen, Wiley  
 Associate Professors: Bilderback, Bohnstedt, Comegys, V. Matthew  
 Assistant Professors: Brouwer, Chang, Echols, Gade, Goodwin, Kensel, Klassen,  
 Merkley, Nalbandian, Senese, Smetherman, E. K. Smith, Strand  
 Lecturer: Kerbow  
 Part-time: Everett, A. Leavenworth, Lubic, R. Matthew, Phillips, Sawyers

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, 172, 173, 174, 176, 177, or 181.

## 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 requirement in social science. No course may be used to meet more than one line of requirements.

	<i>Units</i>
Modern Europe: Hist 141, 142, 146, 147 .....	6
United States: Hist 171, 172, 173, 174 .....	6
Hist 199 .....	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 104, 105, 106, 107, 109T, 111A, 133, 135, 136	
Ancient, Medieval: Hist 111A-B, 119T, 120, 121, 122, 131, 132, 137	
Modern Europe: Hist 131, 132, 137, 138, 143, 144, 149T, 160A-B	
England, British Empire: Hist 151, 152, 155, 158	
Latin America: Hist 160A-B, 162A-B-C, 165, 166, 169T	
United States: Hist 167, 175, 176, 177, 179T, 181, 189A-B	

Additional Requirements: Approved upper division electives in related field (6 un). Lower division courses: Hist. 1, 2, 3, or 7.

**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, 7, 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 see the sections on *Public School Credentials* and the *School of Education*.

**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.

*Courses***HISTORY****1. Western Civilization to 1650 (3)**

Meets general education requirement in the area of man and culture. Foundations of western civilization; interdependence of cultures and peoples; cultural development from prehistoric times to 1650. (2 lecture, 1 quiz sections.)

**2. Western Civilization Since 1650 (3)**

Not open to students with credit in Hist 4A-B. Meets general education requirement in the area of man and culture. Political, social, and cultural history of Europe since 1650; European expansion and impact of western civilization upon the non-European world; Asian and African nationalist movements in 19th and 20th centuries.

**3. Colonial America (3) (Former Hist 8A)**

May apply on general education group 7. Western Hemisphere history from discovery to independence.

**7. Far Eastern Civilization (3)**

Meets the general education requirement in the area of man and culture. The cultures and history of the Far East from the earliest times to the present.

**11. American History to 1865 (3)**

Not open to students with credit in Hist 10. Meets the American history requirement in general education. The formation of the Union and the development of American society to 1865.

**12. American History from 1865 (3)**

Not open to students with credit in Hist 10. Meets the American history requirement in general education. The development of American society since 1865.

**104. China (3)**

Prerequisite: Hist 7. Evolution of Chinese culture and nationality from antiquity 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 7. 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. Prerequisite: Hist 7. History and cultures of Southeast Asia from earliest times to the present.

**109T. Studies in Non-Western History (1-3; max total 6 if no area repeated)**

Prerequisite: permission of instructor. Emphasis on class discussion and closely supervised research and writing. Possible topics include Buddhism, Confucianism, Taoism; conflicts between Eastern and Western thought; mandate system after World War I; Middle East independence movements, Ottoman Period; Palestine Hebrew-Arab relations.

**111A-B. Ancient World (3-3)**

Prerequisite: Hist 1 or equivalent. The ancient Mediterranean world. (A) The Near East and Greece from the earliest times to Philip of Macedon. (B) Alexander the Great, the Hellenistic world, Rome to the reign of Constantine.

**119T. Studies in Ancient and Medieval History (1-3; max total 6 if no area repeated)**

Prerequisite: permission of instructor. Emphasis on class discussion and closely supervised research and writing. Possible topics include Greek city-states, decline and fall of the Roman Empire, rise of Christianity, Crusades, Conciliar Movement, feudal institutions, urbanization of Europe.

**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. Russian Civilization to 1800 (3) (Former Hist 137A)**

Prerequisite: Hist 1, 2, or permission of instructor. The country and peoples of Russia from the ninth century to 1800.

**138. Russian and Soviet Civilization Since 1800 (3) (Former Hist 137B)**

Prerequisite: Hist 1, 2, or permission of instructor. Political, cultural, and social progress of the Russian people during the 19th and 20th centuries.

**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.

**143. Germany (3)**

Prerequisite: Hist 2 or equivalent. Political, social, and cultural development of Germany from the seventeenth century to the present.

**144. Modern France (3)**

Prerequisite: Hist 2 or equivalent. French culture, institutions, and politics from the Old Regime to the Fifth Republic.

**146. Europe 1815-1914 (3)**

Prerequisite: Hist 2 or equivalent. Political, social, and cultural development of Continental Europe from the Congress of Vienna to the outbreak of the First World War.

**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 (1-3; max total 6 if no area repeated)**

Prerequisite: permission of instructor. Emphasis on class discussion and closely supervised research and writing. Possible topics include The Enlightenment, Social Movements of the Reformation Era, Bismarck, European Colonialism and Nationalism in Africa, Revolutionary Tradition in Russia, War in the Modern World, Nazi Germany.

**151. England to 1603 (3)**

Political, economic, and cultural development of the British Isles; constitutional growth; ancient and medieval times through the Renaissance and Reformation to the end of the Tudor Period.

**152. England Since 1603 (3)**

Main currents in the thought, culture, and social progress, with emphasis upon constitutional growth, of the British peoples from 1603 to the present.

**155. British Empire Since 1714 (3)**

Prerequisite: Hist 1, 2, or equivalent. Older overseas empire and break-up; newer empire after 1783; rise, federation, and imperial relations of self-governing dominions; crown colony system; India under the British; British expansion in Africa and the Pacific.

**158. Canada (3)**

Prerequisite: Hist 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 (2-2)**

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.

**162A. Platine Countries (3)**

Prerequisite: Hist 3 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 3 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 3 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. Middle America (3)**

Prerequisite: Hist 3 or equivalent. Evolution of the states of Middle America out of the dissolution of the Viceroyalty of New Spain and the First Mexican Empire: Mexico and the six Central American Republics, 1800 to present.

**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 Foreign Policy (3)**

Principles, ideals, and policies of United States in foreign relations.

**169T. Studies in Latin American History (1-3; max total 6 if no area repeated)**

Prerequisite: permission of instructor. Emphasis on class discussion and closely supervised research and writing. Possible topics include agrarian reform, social change, economic problems, cultural trends, political philosophies, action in world organizations, Latin America and the Cold War.

**171. Early American History, 1607-1783 (3)**

Meets the American history requirement in general education. 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 in general education. Political, economic, social, and cultural developments of the early agrarian republic.

**173. United States History, 1850-1914 (3)**

Meets the American history requirement in general education. 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 in general education. 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.

**179T. Studies in United States History (1-3; max total 6 if no area repeated)**

Prerequisite: permission of instructor. Emphasis on class discussion and closely supervised research and writing. Possible topics include constitutional history, religious history, military history, agricultural history, urban history, business history, and others.

**181. Westward Movement (3)**

Development of western civilization in United States; movement of people and ideas from east to west, persistence and significance.

**185. San Joaquin Valley (2)**

San Joaquin Valley from Indian days to present; recent expansion in agriculture and industry.

**189A-B. California (2-2)**

Prerequisite: Hist 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.

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

See *Regulations and Procedures—Independent Study*.

**199. Advanced Study in History (3)**

Prerequisite: upper division standing, major in history or political science; permission of instructor. Introductory course for advanced work; bibliography, research techniques, historical writing; appraisal of historians of contemporary significance.

**GRADUATE COURSES**

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

**202. Seminar in Historiography (3; max total 6 if area not repeated)**

Prerequisite: major or minor in one of the social sciences, Hist 199 or permission of instructor. Advanced studies in a field of history—American, Latin American, European; writings and philosophies of great historians; development of historiography.

**205. Seminar in Far Eastern History (3; max total 6)**

Prerequisite: Hist 199 or permission of instructor. Research in specific areas of Far Eastern history and culture.

**240. Seminar in European History (3; max total 6)**

Open only to history and social science majors. Prerequisite: Hist 199 or permission of instructor.

**263. Seminar in Latin-American Studies (3; max total 6)**

Prerequisite: Hist 199 or permission of instructor. Recommended: reading knowledge of Spanish or Portuguese. Research in specific areas of Hispanic American history and culture. Field trips to the University of California and Bancroft Libraries.

**270. Seminar in American History (3; max total 6)**

Open only to history and social science majors. Prerequisite: Hist 199 or permission of instructor.

**278. Seminar in Recent Interpretations of American History (3; max total 6 if topic not repeated)**

Prerequisite: teaching credential with social science major; or history major or minor. Examination of selected problems in American history in the light of new research discoveries; extensive use of scholarly journals.

**289. Seminar in California History (3; max total 6)**

Prerequisite: Hist 199 or permission of instructor. Research on special problems in California history.

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

See *Regulations and Procedures—Independent Study*.

**299. Thesis (2-4; max total 4)**

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

**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

Associate Professor: Brengelman (Chairman)

Assistant Professors: Black, Gammon, Hays, Hopkins, Wohl

Part-time: Bischel, Kellas, Markley, Starkman

The Linguistics Department offers a 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.

## 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.

*Courses*

## LINGUISTICS

**134. Structure of English (4) (Same as Engl, Spch 134)**

Not open to students with credit in Engl or Ling 135; 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 Engl, Spch 135)**

Not open to students with credit in Ling 134. Descriptive and historical linguistics; relationships between language and culture.

**137. American English (3) (Same as Engl, Spch 137)**

Prerequisite: Ling 134 or 135. Studies in the linguistic structure of modern English.

**138. History of the English Language (3) (Same as Engl 138)**

Empirical study of the development of the sound system, grammar, and vocabulary of English.

**139A. Phonetics and Phonemics (3)**

Prerequisite: Ling 135. Study of phonetic feature of languages; phonetic, phonemic, and practical alphabets.

**139B. Morphology and Syntax (3)**

Prerequisite: Ling 135. Theory and practice in the description of grammatical systems. Comparison of approaches. Practical experience with data.

**139C. Field Methods in Linguistics (3)**

Prerequisite: permission of instructor. Theory and practice in the collection and analysis of linguistic data.

**140T. Topics in Linguistics (3; 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.

**156. Voice Science (3) (See Sp Corr 156)****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.

**201. Foreign Language Linguistics (2; max total 4 if no language repeated) (See F Lang 201)****202. Seminar in Historical Linguistics (2; max total 4 if no language repeated) (See F Lang 202)****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 (Chairman), Alkire, Labarre  
 Associate Professors: Ewy, E. Robinson, Zane  
 Assistant Professors: Donohue, Lyons, Nur, Schwitters, R. Shaw, Torrance  
 Part-time: G. Jensen, Malkani, McIntire, W. Rogers

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*.

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 Mathematics and Biology Departments. See *Special Programs—Moss Landing Marine Laboratories*, for course descriptions see *Biology Department*.

**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 "4" or "5" on the advanced placement examination in mathematics administered by the College Entrance Examination Board will be allowed five units of credit for Math 75. 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.

**MAJORS**

The Mathematics Department offers majors for the bachelor of arts degree and the bachelor of science degree. The bachelor of arts degree is designed primarily for those preparing for graduate study or teaching in mathematics. The bachelor of science degree is intended to prepare those who plan to enter industrial or other applied areas. Any student planning advanced study is advised to meet the foreign language requirement of the school he plans to attend.

<b>Mathematics Major for BA Degree</b>	<i>Units</i>
Math 75, 76, 77, 151, 152, 161 or 162 or 165, 171 .....	23
Elect from: Math 103, 107, 108, 109, 110, 111, 116, 153, 161, 162, 165, 172, 173, 174, 181, 182 .....	12
	35

**Mathematics Major for BS Degree***Units*

Math 75, 76, 77, 123 or 181, 107 or 109, 151, 152, 171 ..... 26  
 Elect from: Math 107, 108, 109, 121, 123, 131, 153, 172, 173, 174, 181, 182..... 12

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38**MINOR**

The minor in mathematics includes 20 units of mathematics courses, of which at least 6 must be upper division. Math 27, 28, 29, 30 may not be applied on the minor.

**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 ARTS AND MASTER OF SCIENCE DEGREES**

The graduate programs in mathematics for master's degrees are based on the corresponding undergraduate programs at Fresno State College. Math 152, 153, 172, 173, and 181 must be completed if not taken in the undergraduate program. In addition, master of arts degree candidates must include Math 110 or 210. For additional information 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 mathematics requires two years of satisfactory collegiate study (or the equivalent) in one foreign language. The foreign language requirement may be met by the passing of a proficiency examination.

*Courses***MATHEMATICS****27. Elementary Algebra (no credit)**

Offered only in extension and summer sessions. Transition from arithmetic to symbolism and generalization of algebra, fundamental operations, equations, formulas, sets, graphs. (See *Duplication of Courses*.)

**28. Plane Geometry (no credit)**

Offered only in extension and summer sessions. Prerequisite: elementary algebra. Points, lines, angles, triangles, polygons, circles; axioms, theorems, problems; proofs and constructions. (See *Duplication of Courses*.)

**29. Intermediate Algebra (3) (Former Math B)**

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) (Former Math C)**

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.

**51. Elements of Modern Mathematics (3) (Former Math 130)**

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 1 (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) (Former Math 3)**

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, limits and derivatives, applications of differentiation, differentials, elementary transcendental functions, the definite integral.

**76. Mathematical Analysis II (4) (Former Math 4)**

Prerequisite: Math 72 or 75. Definite integrals, indefinite integrations, vectors, polar coordinates, solid analytic geometry, multiple integrals.

**77. Mathematical Analysis III (3) (Former Math 6)**

Prerequisite: Math 76. Partial derivatives, line integrals, Green's theorem, Taylor's theorem, L'Hospital's rules, sequences, convergence tests for infinite series, introduction to differential equations.

**81. Advanced Engineering Mathematics (3) (Former Math 117)**

Prerequisite: Math 77. Vectors and matrices; introduction to ordinary differential equations, Laplace transforms, orthogonal functions, Fourier series; introduction to functions of a complex variable; partial differential equations.

**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 77. Introduction to statistics, mathematical development of probability, measures of central tendency and variability, moments, normal distribution, linear correlation.

**108. Advanced Statistics (3)**

Prerequisite: Math 107. Theory of sampling; problem of estimation; tests of significance; statistical hypotheses; confidence limits; the t, F, and chi-square distributions; analysis of variance and covariance; application of certain tools and techniques.

**109. Probability (3)**

Prerequisite: Math 77. Classical and axiomatic viewpoints; joint, marginal, and conditional probabilities; Bayes' theorem; repeated trials; convolutions; limit theorems.

**110. Symbolic Logic I (4) (See Phil 110)**

**111. Symbolic Logic II (4) (See Phil 111)****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. Theory and methods of solution of ordinary and partial differential equations with special emphasis upon applications in the physical sciences.

**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.

**140. Arithmetic and Algebra of the Rational Number System (3)**

Not open to mathematics majors. Meets general education mathematics requirement for elementary credential candidates. Prerequisite: elementary algebra and geometry. Development of the rational number system and its subsystems from the informal point of view; sets, relations and operations, equivalence classes; definitions of number systems, isomorphism; algorithms for operations with numbers; prime numbers and divisibility; ratios; applications.

**151. Principles of Algebra (3) (Former Math 102)**

Prerequisite: Math 76. Integral domains; ordered fields; rational, real, and complex numbers; polynomials and theory of equations.

**152. Linear Algebra (3) (Former Math 114)**

Prerequisite: Math 151. Linear transformations, matrices, determinants, linear functionals, bilinear forms, quadratic forms, orthogonal and unitary transformations, selected applications of linear algebra.

**153. Modern Algebra (3) (Former Math 115)**

Prerequisite: Math 152. Group theory, field theory, elements of Galois theory.

**161. Principles of Geometry (3) (Former Math 101)**

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) (Former Math 106)**

Prerequisite: Math 151 or 161. 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) (Former Math 7)**

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 (3) (Former Math 118A)**

Prerequisite: Math 171. The real number system; function theory, continuity, differentiability; partial differentiation.

**173. Advanced Calculus (3) (Former Math 118B)**

Prerequisite: Math 172. Multiple integrals; line and surface integrals; Fourier series and integrals; infinite series.

**174. Complex Analysis (3)**

Prerequisite: Math 171, or 81 and permission of instructor. Cauchy's integral theorem and formula, Taylor's and Laurent's series, contour integration, elementary conformal mappings; applications.

**181. Differential Equations (3) (Former Math 119)**

Prerequisite or concurrently: Math 171. 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) (Former Math 122)**

Prerequisite: Math 181. 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: Math 152, 172. 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, 171. Fundamental notions regarding number theory, number systems, algebra of number fields; functions.

**210. Foundations of Mathematics (3) (Same as Phil 200) (Former Math 200)**

Prerequisite: Math 110 or 151. Mathematical logic with applications to the development of the real number system and philosophy of mathematics.

**216. Topics in Number Theory (3; max total 6)**

Prerequisite: Math 116. An investigation of topics having either historical or current research interest in the field of number theory.

**221. Advanced Numerical Analysis (3)**

Prerequisite: Math 121. Linear equations and matrices; parabolic, hyperbolic, and elliptic differential equations; constructive function theory.

**223. Principles and Techniques of Applied Mathematics (3)**

Prerequisite: Math 123. Linear spaces and spectral theory of operators.

**251. Abstract Algebra (3) (Former Math 231)**

Prerequisite: Math 153. Semi-groups, groups, groups with operators, rings, fields, lattices.

**252. Linear Algebra (3) (Former Math 232)**

Prerequisite: Math 153. Vector spaces, linear transformations, sets of linear transformations, Euclidean and unitary spaces, infinite dimensional vector spaces.

**263. Point Set Topology (3) (Former Math 211)**

Prerequisite: Math 173. 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) (Former Math 215)**

Prerequisite: Math 165, 173. 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) (Former Math 207)**

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) (Former Math 205)**

Prerequisite: Math 173, 174. Analytic functions, conformal mapping, analytic continuation, meromorphic functions, contour integration and the residue theorem, Laplace transform.

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

See *Regulations and Procedures—Independent Study*.

**291. Seminar (3) (Former Math 241)**

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: R. Rea (Chairman), Berdahl, A. Bryon, Howland, J. Winter  
 Associate Professors: Baddin, Bakkegard, Bennett, Dempster, Irwin  
 Assistant Professors: A. Huff, J. H. Martin, Vorce  
 Instructor: Truchan  
 Part-time: Mueller, Nicklett, R. Nielsen, D. Renzi, B. Robinson

The Music Department offers the following curricula leading to the bachelor of arts degree with a major or a minor in music, with or without a teaching credential. In addition to curricula designed to prepare the student for a professional career in the performance or teaching of music, courses are offered to satisfy general education requirements and avocational objectives for the non-music major.

The department also offers courses leading to the master of arts degree with music education, composition, history and literature, or performance as major areas of concentration.

Students should consult with the department chairman before registering for the major in music.

#### SPECIAL MUSIC REQUIREMENTS

1. Music majors are required, with the approval of the department chairman, to declare a major area of performance and to perform a satisfactory senior recital in certain areas of specialization before being approved for graduation. (See Mus 10 for applied music areas)
2. All students declaring a music major will be evaluated at the end of each of their first two semesters in the department before being permitted to continue in the major.
3. All transfer students planning to major in music will be required to take a theory placement test which will be scheduled each semester during the orientation period for new students.
4. Music majors are required to participate in a music laboratory each semester. Voice majors will satisfy this requirement by enrolling in a cappella choir; string majors by enrolling in orchestra; brass, woodwind, and percussion majors by enrolling in band; others by enrolling in one of the instrumental or choral organizations named above. After a student has experienced four semesters in the required music laboratory, two of which must have been at Fresno State College, he may elect from any of the choral or instrumental ensembles offered (Music 1-101).
5. Students enrolled in music laboratories in the fall semester are expected to re-enroll for the spring semester. The nature of the work in music organizations (band, orchestra, chorus, etc.) makes it essential that constant personnel be maintained throughout the year. Participation in public performances of these groups must take precedence over any conflicting outside activities.
6. Music majors are expected to attend all departmental concerts and recitals.
7. All students enrolled in applied music courses must attend the monthly departmental student recitals.
8. Music majors enrolled in intermediate or advanced applied music classes and all students enrolled in advanced applied music courses are expected to appear in student recitals.
9. Music majors should include Physics 55 in the general education program.

#### BACHELOR OF ARTS DEGREE

Each student desiring a bachelor of arts degree with a major or minor in music must fulfill all the requirements listed under *General Degree Regulations* and *General Education*, and complete one of the curricula listed below.

**MUSIC MAJOR**(See *Special Music Requirements*)

	<i>Units</i>
Mus 4A-B, 14A-B, 111A-B _____	18
Complete one of the following options _____	18-26

**Option I.** *Designed to provide suitable preparation for such special areas as (1) performance, (2) composition and arranging, (3) other nonteaching professions in music.*

Mus 110 (8 units major instrument or voice, at least 4 units in advanced class), 114A-B, 116; elect 2 units from Mus 104, 124, 134, 136, 154A-B, senior recital (18 units)

**Option II:** *Designed for those who wish to complete an academic major in music and are interested in securing a standard teaching credential with secondary specialization.*

Mus 110 (8 units major instrument or voice, at least 4 units in advanced class), 114A-B, 116, 136 or 187, senior recital, piano and voice tests or instrumental technique tests (18 units)

**Option III.** *Designed for those who wish to complete an academic major in music and are interested in securing a standard teaching credential with elementary specialization.*

Mus 101 (4 units), 10-110 (8 units piano or voice in minor performance area), 110 (8 units piano or voice, major performance area), 129, 154A, 176T (Children's Literature) (26 units)

36-44

*Recommended elective:* Mus 139

**MUSIC MINOR**

The minor in music requires the completion of at least 20 units approved by the department chairman, 6 of which must be upper division. Fields of concentration in choral or instrumental music are offered.

**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 ARTS DEGREE**

The graduate program for the master of arts degree in music is based upon the equivalent of the undergraduate major in music at Fresno State College. Of the 30 units required for the degree, 18 must be in music. For specific requirements, consult the chairman of the department; for general requirements, see *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*

### MUSIC

#### **1. Music Laboratory (1-2; max see below) (Same as Mus 101)**

Maximum total credit 12 units, not more than 8 of which can be in any one activity. Prerequisite: audition. Freshmen and sophomores (fewer than 60 units) register for Mus 1; others (more than 60 units) register for Mus 101. May apply on general education requirement in the arts. Group performance of music literature for interpretative and creative experience. (See *Special Music Requirements*, 2 and 3)

A cappella choir, college chorus, male chorus, women's chorus, orchestra, band, dance band, AFROTC band, band workshop, opera workshop, chamber music ensembles, small vocal ensembles (single and double duets, trios, quartets, quintets, sextets, octets), small instrumental ensembles (brass and woodwind choirs, string and mixed ensembles). (2 lecture, 2 lab hours per unit)

#### **4A-B. Fundamentals of Music (3-3)**

Fundamentals of musical theory; ear training and sight singing. (5 lecture-lab hours)

#### **9. Music Fundamentals for Elementary Teachers (3)**

Recommended for elementary credential students. Basic skills and fundamentals for teaching music in the elementary school; piano keyboard; writing and reading music; singing unison and part songs; playing simple melodic and rhythmic instruments; listening to recorded music.

#### **10. Class Instruction in Applied Music (2; max total 8 each area) (Same as Mus 110)**

Prerequisite: audition. Freshmen and sophomores (fewer than 60 units) register for Mus 10; others (more than 60 units) register for 110. Instruction according to level of student performance ability. (See *Special Music Requirements*, 5 and 6) Applied music areas: flute, oboe, clarinet, bassoon, French horn, trumpet, trombone, baritone, tuba, percussion, violin, viola, cello, bass, organ (special fee), piano, voice, harp. (2 lecture, 2 lab hours)

#### **14A-B. Harmony (3-3)**

Prerequisite: Mus 4A-B or equivalent. Fundamentals of harmony; diatonic and simple chromatic harmony of the eighteenth and early nineteenth centuries.

#### **19. Introduction to Music (2)**

Not open to music majors or students with credit in Mus 4A-B or 9. May apply on general education requirement in the arts. The rudiments of music and notation necessary for the reading and understanding of music by the layman.

#### **76T. Listeners' Guide to Music (2; max total 6 if no area repeated)**

Not open to students with credit in Mus 76. May apply on general education requirement in the arts. Directed listening for students untrained in music. Areas include introduction to concert music; music of the 17th and 18th centuries; music of the 19th and 20th centuries.

#### **101. Music Laboratory (1-2) (See Mus 1)**

#### **104. Counterpoint (2)**

Prerequisite: Mus 14A-B. Modal polyphony of the late sixteenth century; analysis; composition of single lines, simple counterpoint, all types of imitation; writing of three-voice motets with text.

**106. Basic Instrumental Techniques for Teachers (2; max total 8)**

Basic techniques for teaching instrumental music in public schools; procedures, methods and materials for conducting beginning instrument classes in woodwinds, brass, percussion, violin-viola-cello-bass. See *Special Music Requirements*, 7. (1 lecture, 2 lab hours)

**110. Class Instruction in Applied Music (2; max total 8 each area) (See Mus 10)****111A-B. History of Music (3-3)**

Open only to music majors and minors except by permission of instructor. Mus 111A is not prerequisite to Mus 111B. Chronological survey and analysis of the development of music.

**114A-B. Advanced Theory (3-3)**

Prerequisite: Mus 14A-B. Analysis and application of traditional and contemporary harmonic practices.

**116. Conducting (2)**

Candidates for teaching credentials should take this course prior to student teaching. Instrumental and choral conducting; essential personal traits and baton techniques. Individual participation; supplementary reading with observation of successful conductors.

**119. Classroom Music for Elementary Teachers (2; max total 4)**

Prerequisite: Mus 9 or equivalent. Workshop approach to acquaint the classroom teacher with state text materials; methods of developing a varied program of singing, rhythmic, instrumental, listening, and creative activities within the classroom.

**124. Form and Analysis (2)**

Prerequisite: Mus 14A-B. Analysis of the principal music forms.

**128. Accompanying (1; max total 4)**

Prerequisite: advanced standing in piano; permission of instructor. Accompanying under supervision. (2 lab hours)

**129. Elementary School Music Activities (2)**

Recommended for elementary credentials and students with limited music experience. Prerequisite: Mus 9 or 4A. Singing, rhythmic, instrumental, listening, and creative activities, using state textbooks and supplementary materials. Group observations.

**134. Composition (2; max total 8)**

Prerequisite: Mus 14A-B, permission of instructor. Original composition in various forms, styles, and techniques.

**136. Orchestration (2; max total 4)**

Prerequisite: Mus 14A-B. Technical aspects of orchestral instruments, their use in achieving various tone colors; problems in scoring for school instrumental ensembles.

**137. Band Arranging (2)**

Prerequisite: Mus 136. Technical aspects of band instruments, their use in achieving various tone colors; problems in scoring for school instrumental ensembles.

**138. Piano Skills for Teachers in Service (2; max total 4)**

Open only to teachers in service. Basic keyboard skills needed by elementary teachers.

**139. Elementary Music Education (3)**

Prerequisite: Mus 129 (except for secondary credential candidates). Philosophy of elementary school music education; organization of music curriculum materials and activities into lesson plans and projects. Observation and practice of teaching methods.

**154A-B. Keyboard Harmony (2-2)**

Recommended to students needing additional harmonic drill at the keyboard to increase sensitiveness to music and its structure. Application at the keyboard of all the harmonic materials studied in previous courses.

**176T. Topics in Music Appreciation (2; max total 8 if no area repeated)**

May apply on general education in the arts. Prerequisite: Mus 76T or ability to read music. Directed listening; analysis of music. Areas of music include symphony, keyboard, choral, opera, chamber, baroque, classical, romantic, impressionistic, and contemporary.

**187. Choral Techniques and Literature (2)**

Prerequisite: Mus 116. Problems in achieving superior choral tone and diction, rehearsal techniques, style and interpretation, conducting techniques, and organization and management; survey of choral literature suitable for school and church ensembles.

**188. Teaching Piano in Public Schools (3)**

Modern methods of piano teaching; classes in public schools; individual and class teaching; application of methods in Laboratory School.

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

**206. Advanced Instrumental Techniques (2; max total 4)**

Prerequisite: Mus 106 or equivalent; permission of instructor. Teaching and playing techniques for brass, woodwind, string, and percussion instruments; reed making; acoustical principles and application in teaching; materials and literature.

**210. Studies in Performance (1-2; max total 4)**

Prerequisite: permission of department chairman. Individual lessons on instrument or in voice; historical, analytical, and practical study of standard literature of all periods in major performance area; preparation for public recitals. (Special fee)

**214. Theory Seminar (2; max total 4)**

Prerequisite: permission of instructor. With approval of instructor, each student elects a project of analysis, arranging, composing, or study according to his special capabilities and interests.

**220. Research Methods and Bibliography (2)**

Prerequisite: undergraduate history of music. Basic bibliography, literature, and research techniques necessary for graduate study in music. Required of all graduate students working for the master's degree in music.

**221. Seminar in Music History (2; max total 6 if no era repeated)**

Seminar in critical and analytical study of selected works by composers of an era: Renaissance and Baroque; Classic and Early Romantic; Romantic and Contemporary.

**224. Studies in Musical Analysis (2; max total 6)**

Directed individual studies in the analysis of selected works; form, thematic and motive development, harmonic structure, compositional devices and their significance.

**234. Studies in Composition (2; max total 6)**

Prerequisite: permission of instructor. Directed individual studies in composition; reference to works of acknowledged composers; development of contemporary technique in structural and harmonic methods. One work in a given classical form required with choice of harmonic and rhythmic style.

**236. Studies in Orchestration (2; max total 4)**

Prerequisite: permission of instructor. Directed individual studies in writing for the modern symphony orchestra; preparation of scores based on models from Ravel, Bartok, Roussel, and Stravinsky, development of the symphony orchestra and classical scores.

**239. Seminar in Music Education (2; max total 4)**

Advanced problems in music education according to needs of students enrolled; administration, supervision, vocal, and instrumental fields.

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

See *Regulations and Procedures—Independent Study*

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

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

**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. Music Workshop-Clinic (1-2; max total 8)****307. Musical Instrument Repair (1; max total 3)**

## PHILOSOPHY DEPARTMENT

Professors: Colver, Uphold

Associate Professor: Pitt (Chairman)

Assistant Professors: H. Foster, S. Montgomery, R. Paul, Schmitt

Part-time: Carter, Hahey

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, 66; 3 units from Psych 108, 110, 133; 9 units of psychology (ud)	18
Philosophy (ud) .....	16
	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 see the sections on *Public School Credentials* and the *School of Education*.

### RELIGIOUS STUDIES

Students interested in the area of religious studies should note that the Philosophy Department offers courses on such topics as Religion and the Modern Mind (Phil 20T); Literature of the Old Testament, Literature of the New Testament, Religious Philosophies of Asia, and Philosophical Theology (Phil 150T topics). Related courses offered in other departments include Formation of the Medieval Order (Hist 121), Disintegration of the Medieval Order (Hist 122), Reformation (Hist 132), The Religious Factor in United States History (Hist 179), Psychology of Religion (Psych 141), and Sociology of Religion (Soc 159).

### *Courses*

#### PHILOSOPHY

#### **20T. Introductory Topics in Philosophy (4; max total 8 if no topic repeated)**

Problems in diverse areas of philosophy, including ethics, religion, analysis, social philosophy, theory of knowledge, and history of philosophy.

**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)**

Sections designated as concentrating on one or more philosophers or historical periods.

**110. Symbolic Logic I (4) (Same as Math 110)**

Prerequisite: Math 75 or permission of instructor. Rigorous development of deduction; 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.

**111. Symbolic Logic II (4) (Same as Math 111)**

Prerequisite: Phil 110 or permission of instructor. Continuation of Phil 110: Logic of relations and identity; reduction to normal forms; formalization of informal proofs; formal definition of theoretical concepts and axiomatization of scientific theories.

**150T. Special Topics (1-4; max total 32 if no topic repeated)**

Sections designated as concentrating on 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 COURSE**

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

**200. Foundations of Mathematics (3) (See Math 210)**

PHYSICAL EDUCATION AND RECREATION DEPARTMENT

**MEN**

Professors: Coleman (Chairman), H. Beatty (Coordinator—Men), Gleason, Hairabedian, B. Johnson, Pape, Warmerdam  
 Associate Professors: M. Anderson, Beiden, Burgess, Gregory, Juliana, Wild  
 Assistant Professors: Donnelly, Estes, Francis, Van Galder  
 Instructor: Guzman  
 Lecturer: Rogers  
 Part-time: Ballard, Devey, Murray, Schmidt

**WOMEN**

Associate Professors: Doyle, Hupprich, Mason (Coordinator—Women)  
 Assistant Professors: Flake, Kennedy, Pickel, Schroll, S. Thompson, Thomson  
 Instructor: Poston  
 Part-time: Owensby, Walts

**ACTIVITIES**

Students are expected to take physical education activities (PE M, C, SM, SW, or W series) during the first four semesters. (See *Degrees and Credentials—General Education 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.

Entering men students are given a motor skills test during freshman week, which assists in assignment to an appropriate section of PE M1, which is required of all first-year students. All men students are given a water skills test during freshman week; those failing must take beginning swimming.

**MAJORS**

**Men**

A major in physical education for the bachelor of arts degree consists of 44 units listed below, exclusive of the general education requirement.

	<i>Units</i>
PE 30, 35A-B-C, 45A-B-C-D-E, Rec 60 .....	12
PE 106, 108, 125A-B-C-D, 152, 153, 154, 156A-B-C, 159, H Sc 123 .....	32
	—
	44

*Additional Requirements:* Biol 2A, 66, 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 46 units listed below, exclusive of the general education requirement.

<i>Option 1. General</i>	<i>Units</i>
PE 15A-B-C-D, 30, 45A-B-C-D-E, Rec 60 .....	15
PE 111, 115A-B-C-D, 152, 153, 154, 156A-B-C, 159, H Sc 123 .....	28
Elec from: PE 106, 108, 163, 164T, 166, Rec 160 .....	3
	—
	46

*Additional Requirements:* Biol 2A, 66, Phys Sc 10 or 12 or equivalent, H Ec 40 or 42.

<i>Option II. Dance (in Education. Coeducational)</i>	<i>Units</i>
PEC 18, 20, PE 15A, 30, 59, 65, 67, activity courses (4 units) .....	22
PE 115A, 153, 156A-B, 164T, 167 .....	16
Electives in dance (ud) .....	3
Electives (approved ud) .....	5
	46

Additional Requirements: Biol 2A, 66.

<i>Option III. Dance (for performance. Coeducational)</i>	<i>Units</i>
PEC 18, 20, PE 63, 65 .....	11
PEC 118, 120, PE 156A-B, 163, 164T, 166 .....	20
Approved electives (at least 7 ud) .....	15
	46

Additional Requirements: Biol 2A, 66.

### MINORS

#### Men

The minor in physical education consists of 21 units of which at least 12 must be upper division and permits, with guidance, a selection of courses to satisfy special interests and needs.

	<i>Units</i>
PE 30, 35A-B-C, 45A-B-C-D .....	9
PE 106, 152, 153, 159 .....	8
PE electives 125A-B-C-D .....	4
	21

#### Women

The minor in physical education, with two options, consists of 21 units of which at least 12 must be upper division.

<i>Option I. General</i>	<i>Units</i>
PE 15A-B, 30, 45D .....	7
PE 115A-B, 152 .....	4
Elect from: PE 15C-D, 45A-B-C .....	2
Elect from: PE 106, 108, 111, 115C-D, 153, 156A-B-C, 159, 161 .....	8
	21
<i>Option II. Dance</i>	
PEC 18, PE 63, 65 .....	9
PE 163, 164T .....	6
Approved electives in dance (ud) .....	6
	21

### 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 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.

**Courses**

*Note: Not more than 2 units in any one activity (PE M, C, W, SM, SW) may be applied toward the graduation requirement. Activity courses must be taken in sequence. Upper division credit will be given for activities, with exception of PE M1, 2, and PE W28, taken after physical education requirement for graduation has been met.*

**Coeducational**

- C1. Adaptive Body Mechanics (1)**  
Medical referrals.
- C5. Senior Lifesaving (1)**  
(Prerequisite: permission of instructor)
- C6. Water Safety Instructor Course (1)**  
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 and Square Dancing (1)**
- C14. Elementary Social Dancing (1)**
- C16. Elementary Modern Dance (1)**
- C17. Intermediate Modern Dance (2)**  
Prerequisite: C16 or permission of instructor.
- C18. Advanced Modern Dance (3)**  
Prerequisite: C17 or permission of instructor.
- C20. Elementary Ballet Techniques (2)**
- C21. Elementary Archery (1)**
- C22. Intermediate Archery (1)**  
Prerequisite: C21, M28, W21, or permission of instructor.
- C24. Elementary Bowling (1) (Fee \$1.50 per week)**
- C25. Intermediate Bowling (1) (Fee \$1.50 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.
- C31. Elementary Badminton (1)**
- C32. Intermediate Badminton (1)**  
Prerequisite: C31, M34, W31, or permission of instructor.

**C37. Intermediate Golf (1)**

Prerequisite: M25, W36, or permission of instructor.

**C40. Elementary Skiing (1)**

Limited to novice skiers.

**C52. Intermediate American Folk Dance (1)**

Prerequisite: C11.

**C53. Intermediate International Folk Dance (1)**

Prerequisite: C11.

**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)****M26. Intermediate Golf (1)**

Prerequisite: M25 or permission of instructor.

**M28. Elementary Archery (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**

Prerequisite: M40 or permission of instructor.

**M45. Self-Defense (1)**

**Intercollegiate—Men**

- 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**

- SW3. Basketball (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.
- W4. Synchronized Swimming (1)**  
Prerequisite: intermediate swimming skill.
- 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)**
- W31. Elementary Badminton (1)**
- W36. Elementary Golf (1)**
- W37. Intermediate Golf (1)**  
Prerequisite: W36 or permission of instructor.
- W46. Soccer and Hockey (1)**
- W48. Volleyball and Basketball (1)**

**PE M,C,SM,SW,W Upper Division Activities Courses**

*(See Courses—Note.)*

**15A. Fundamentals of Rhythmic Activities (2)**

Coeducational. Limited to physical education majors and minors. Prerequisite: PE C16. Practice and analysis of body movement in dance; rhythmic, space and quality elements; elementary composition; brief history of dance. (2 2-hour lecture-labs)

**15B. Fundamentals of Team Sports (2)**

Women only. Limited to physical education majors and minors. Prerequisite: PE W46 (major-minor section). Strategy, skill, and rules of softball, soccer, speedball, speedaway, volleyball; acceptable performance. (2 2-hour lecture-labs)

**15C. Fundamentals of Basketball (1)**

Women only. Limited to physical education majors and minors. Analysis and practice of skills and team play; interpretation of rules. (2 1-hour lecture-labs)

**15D. Fundamentals of Gymnastics and Track and Field Activities (1)**

Women only. Limited to physical education majors and minors. Analysis and practice of elementary gymnastics and track and field activities; exercises appropriate for conditioning the participant. (2 1-hour lecture-labs)

**30. Foundations of Physical Education (2)**

Coeducational. Introduction to the physical education program in secondary schools; personal, social, and professional requirements; demands on the physical education teacher.

**35A. Theory and Analysis of Team Sports (1)**

Men only. Scheduled first 8 weeks of semester. Limited to physical education and recreation majors and minors. Speedball—Soccer—Volleyball—Softball; analysis and practice of skills.

**35B. Theory and Analysis of Combatives (1)**

Men only. Scheduled second 8 weeks of semester. Limited to physical education majors and minors. Analysis and practice of skills.

**35C. Theory and Analysis of Gymnastics (1)**

Men only. Limited to physical education and recreation majors and minors. Analysis and practice of skills.

**45A. Fundamentals of Aquatics (1)**

Coeducational. Limited to physical education and recreation 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 hours; clinic as needed)

**45B. Fundamentals of Tennis (1)**

Coeducational. Limited to physical education and recreation majors and minors. Prerequisite: intermediate skill. Study and practice of strokes and tactics; rules; history; skill progression for various levels. (2 hours; clinic as needed)

**45C. Fundamentals of Badminton and Golf (1)**

Coeducational. Limited to physical education and recreation majors and minors. Study and practice of fundamentals of badminton and golf; organization and conduct of these activities in secondary school physical education program. (2 hours; clinic as needed)

**45D. Fundamentals of Folk, Square and Social Dance (1)**

Coeducational. Limited to physical education and recreation majors and minors. Prerequisite: C11. Study and practice of elementary leadership in folk, square, and social dance. (2 hours; clinic as needed)

**45E. Fundamentals of Social Recreational Activities (1)**

Coeducational. Limited to physical education and recreation majors and minors. Selection, evaluation, and organization of social recreational activities; facilities and equipment evaluation; practical projects for leadership in home, school, and community activities. (2 2-hour lecture-labs)

**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 (3; max see below) (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 (3) (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 (1)**

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.

**106L. Care and Conditioning of Athletes Laboratory (1)**

Men only. Prerequisite: concurrently with PE 106, permission of instructor.

**108. Organization of Intramural Sports (2)**

Coeducational. For physical education majors. Organization, administration, and motivation of a program of intramural activities in secondary schools.

**111. Techniques of Officiating Tennis and Basketball (1) (Former PE 112)**

Women only. Prerequisite: previous experience in playing tennis and basketball. Interpretation of rules, officiating techniques, practice in officiating. Examinations and ratings are given by the San Joaquin Board of Women Officials, which collects 75 cents for each practical and 25 cents for each written examination. (2 1-hour lecture-labs)

**112A. Theory and Practice of Officiating Football (1)**

Men only. Scheduled first 8 weeks of semester. Prerequisite: varsity squad experience in football or PE 125A; PE 112B concurrent, or permission of department chairman. Analysis and interpretation of rules for football; procedures, mechanics and practice in officiating.

**112B. Theory and Practice of Officiating Basketball (1)**

Men only. Scheduled second 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. Theory and Practice of 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. Theory and Practice of 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. Prerequisite: PE 15A. The dance as an art; criteria for judging the dance and dancers; contemporary dance scene. Practice in planning and presenting techniques, movement progression, and group studies (2 2-hour lecture-labs)

**115B. Theory and Analysis of Team Sports (2)**

Women only. Prerequisite: PE 15 B-C. Purposes, materials, techniques, rules, interpretations, and organization of team sports for girls in secondary schools; planning and participation in drills and formations. (2 2-hour lecture-labs)

**115C. Theory and Analysis of Tennis and Swimming (1)**

Women only. Prerequisite: PE 45A-B. Preparation of lesson plans for swimming and tennis. Practice teaching followed by class evaluation. Opportunity to observe and assist in the conduct of swimming meets and tennis tournaments. (2 lecture-lab hours)

**115D. Theory and Analysis of Gymnastics, Tumbling, and Apparatus (1)**

Women only. Prerequisite: PE 15D. Analysis and practice of elementary stunts in tumbling, pyramid building, apparatus, trampoline, skill progressions, class organization, and methods of spotting for safety. (2 1-hour lecture-labs)

**125A. Theory and Analysis of Football (2)**

Men only. Limited to physical education majors and minors. Principles underlying participation in competitive interscholastic athletics.

**125B. Theory and Analysis of Basketball (2)**

Men only. Limited to physical education majors and minors. Principles underlying participation in competitive interscholastic athletics.

**125C. Theory and Analysis of Track and Field (2)**

Men only. Limited to physical education majors and minors. Principles underlying participation in competitive interscholastic athletics.

**125D. Theory and Analysis of Baseball (2)**

Men only. Limited to physical education majors and minors. Principles underlying participation in competitive interscholastic athletics.

**152. Elementary School Physical Education (2)**

Coeducational. Prerequisite or concurrently: E Ed 105; one course in rhythmical activities (for men PE C11; for women PE C11, C16, C17 and one course in fundamentals, PE W28). Activities, materials, and methods for teaching physical education in elementary schools based on the California state program. (2 2-hour lecture-labs)

**153. Principles of Physical Education (2)**

Coeducational. Prerequisite: PE 30. Principles basic to sound philosophy of physical education for the space age; appraisal of historical development; relationship to health education, recreation, and other areas; foundation and functions of physical education in contemporary American society.

**154. Organization and Administration of Physical Education in Secondary Schools (3)**

Coeducational. Prerequisite: PE 30, 153. Consideration of classification, scheduling, planning facilities for instruction and recreation; role of the physical education teacher in recreation, equipment, budget, co-curricular program, student leadership, community relationship.

**156A. Kinesiology (3)**

Coeducational. Prerequisite: Biol 66, Physio 1 or Biol 2A. 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 2A. 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 2A, 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-C-D. 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 (3; max see PE 63) (See PE 63)**

**164T. History of Dance (3; max total 12 if no topic repeated)**

Coeducational. Evolvement 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 (3) (See PE 67)**

**170T. Studies in Dance (3; max see PE 70T) (See PE 70T)**

**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 (2) (See A Ed 220)****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.

**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.

**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 (2-4; 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.*

**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 plan to prepare for positions requiring major responsibility for leadership, supervision, and administration in public, private, industrial, hospital, park, youth, church, College Union, camping, outdoor education, and commercial recreation agencies. Recreation is closely allied with fields other than physical education. Additional courses emphasized in the recreation major sequence include practical and theoretical courses in recreation, crafts, music, drama, speech, and science.

## BACHELOR OF SCIENCE DEGREE

The bachelor of science degree with a major in recreation is granted upon completion of 128 units including the courses listed below. The general degree regulations and general education requirements must also be fulfilled.

<b>RECREATION MAJOR</b>	<i>Units</i>
Rec 60, 160, 171, 172, 173, 174, 174F, 175, 176, 177 .....	25
PE 45A, 45E, 152 .....	4
Elect from: (Men) PEC 14, PE 35A, 35C, 112A-B-C-D; (Women) PE 45C, C9, 14, W28 .....	2
Biol 101, 102, HSc 48 .....	5
Pol Sc 164B, S Welf 127 .....	6
Psych 111, 119, 120 .....	9
	51

*Additional Requirements:* In addition to the above courses, the following are required: Art 105T (approved section), PE C11 and PE M19 or W6. (May apply on general education requirements.)

*Special Area Requirements:* The required special area program of 20-23 units consists of one of the course groups shown below under art, industrial arts, music, and speech arts and the following additional courses, if not included in the group selected: Art 120T (approved section), IA 133 (2 un) or 162; Mus 19; and Drama 137, 138.

Art: Art 20T (approved sections, 12 units)

Industrial Arts: IA 80, 133, 162, 164, 179 (11 un)

Music: Mus 1-101, 10-110, 19, 129; 2 units music elective (9 un)

Speech Arts: Drama 33, 34, 133, Spch 20 (12 un)

## RECREATION MINOR

The minor in recreation for the bachelor of arts degree consists of 20 units of which 6 must be upper division and permits, with guidance, a selection of courses to satisfy special interests and needs. The recreation minor gives training in activities suitable for use in recreation programs of communities, schools, youth groups, churches, and clubs.

	<i>Units</i>
PE C11, 45D, 45E .....	3
Rec 60, 171, 175 .....	7
Elect from: Art 20T (approved section); IA 133, 177 .....	2
Elect from: Music 1-101 (college chorus); 76T, 176T .....	2
Elect from: Drama 33, 34 .....	3
Elect from: Art, IA, Mus, PE, Spch Arts .....	3

## *Courses*

### **RECREATION**

#### **60. Foundations of Recreation (2)**

General orientation to the profession of recreation; lectures, discussion, practical experience and observation; place of recreation in education.

#### **160. Camp Management (2)**

Not open to students with credit in PE 155. Prerequisite: Rec 60 or permission of instructor. Theory and practice; basic knowledge of practical skills in camping; administration, organization, and programming in various camp settings; functional projects. Overnight and/or week-end camping trips (approximately \$10 camp trip expenses). (2 2-hour lecture-labs)

#### **171. Community Recreation (2) (Former Rec 161A)**

Prerequisite: Rec 60 or permission of instructor. Nature and scope of recreation organization; community organization for recreation; recreation agencies and their services.

#### **172. Recreation Administration (3) (Former Rec 161B)**

Prerequisite: Rec 171 or permission of instructor. Administration of recreation; scope and significance of recognized practices; effective approach to special problems in recreation administration. Individual and group field trips.

#### **173. Programs of Recreation (2) (Former Rec 162)**

Prerequisite: Rec 171, PE 45E, or permission of instructor. Areas of concentration on leadership principles and procedures; essentials of programming, planning aids, indoor and outdoor activities; mechanics of planning, techniques of presentation, repertoire of recreational activities. Projects required. (2 2-hour lecture-labs)

#### **174. Principles and Practices of Recreation (2)**

Prerequisite: Rec 171. Required of recreation majors; open to others by special permission only. Methods, techniques, practical experience, competency in recreation; prerequisite to field work.

#### **174F. Principles and Practices of Recreation (1)**

Prerequisite: Rec 174 (concurrent). A planned work study and/or supervised program of limited field experience as a leader of club, youth, group, center, or playground activity. Application of knowledge to leadership in practice.

#### **175. Field Work in Recreation and Park Leadership (3) (Former Rec 163A)**

Prerequisite: Rec 172, 174. Practical experience as recreation leader with responsibility for programs and activities in a private, public, or special recreation or park agency. Project required; weekly conferences and seminar.

#### **176. Field Work in Recreation and Park Supervision (5) (Former Rec 163B)**

Prerequisite: Rec 173, 175 and completion of all special area requirements. Practical experience in a supervisory capacity, including responsibility for planning, organizing and supervising a recreation or park program. Project required; weekly conferences and seminar.

#### **177. Recreation and Park Planning (3) (Former Rec 170)**

Prerequisite: Rec 173 or permission of instructor. Functional planning for recreation and park services; application of principles; interpretation and use of standards; relation of programs, personnel, finance, legislation, acquisition, and design in the planning process. Functional project, field trip required.

## 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, Phys Sc 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. 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; Phys Sc 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 (2)**

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.

## 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), S. Brown, Donaldson, Eliason

Associate Professor: J. T. Shockley

Assistant Professors: Dews, Judd, Williamson, Zender

Instructor: Colucci

The Physics Department is organized and developed to offer scientific programs leading to various degrees in physics, including the bachelor of arts, bachelor of science, master of arts, and master of science. The programs are arranged to assist in meeting the need for qualified teachers and scientifically trained personnel brought about by the increasing applications of physics to industries, communications, aviation, engineering, national defense and particularly to the research which develops these fields.

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); and mechanical drawing (recommended).

## 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.

## BACHELOR OF ARTS DEGREE IN PHYSICS

	<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 .....	24
Math 75, 76, 77, 81, Chem 1A-B	
Foreign Language * .....	14
Completion of General Education and Electives .....	50
	124

\* Courses taken in high school may reduce this requirement.

**BACHELOR OF SCIENCE DEGREE IN PHYSICS**

	<i>Units</i>
Physics Major .....	43
Phys 4A-B-C, 102, 105A-B, 107A-B, 110, 115, 116, 130A-B, 140	
Additional Requirements .....	36
Math 75, 76, 77, 81, 151, 152, 171, 172, Chem 1A-B	
Foreign Language * .....	14
Completion of General Education and Electives .....	35
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	128

Recommended courses: Phys 120, Engr 70

**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**

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 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.

\* Courses taken in high school may reduce this requirement.

## 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: Math 28, 29, or equivalents 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)

#### **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. Advanced Electricity and Magnetism (3-3)**

Prerequisite: Physics 105A. (A) Mathematical analysis of electrostatics and magnetostatics, Gauss' law, solutions of Laplace's equation, images, theory of conduction, magnetic potentials. (B) Motion of ions in electric and magnetic fields, electromagnetic induction, Maxwell's equations and wave propagation, electron theory and magnetic properties.

#### **110. Physical Optics (3)**

Theory of optical phenomena; wave theory of light with applications to optical instruments; interference and diffraction phenomena, dispersion, polarization.

**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 direct and alternating current measuring instruments. (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 (Chairman), Svenson

Associate Professor: Provost

Assistant Professors: Beach, Cunningham, Kolstad, Moore, Plafkin, Rotstan

Lecturer: Dargahi

Part-time: Hubbart, A. Leavenworth, Sarkisian

The Political Science Department offers courses leading to a bachelor of arts degree with a major or minor in political science or 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 non-major to meet the general education requirements and provide insight into the field of politics for the general 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

Majors in political science are required to complete satisfactorily two semesters of college work (or its equivalent) in a modern foreign language, plus either an additional 6 units in the same foreign language or 6 units of statistics and/or electronic data processing. Majors in public administration are required to complete satisfactorily one of the following options: four semesters of college work (or its equivalent) in a modern foreign language; or 12 units of statistics and/or electronic data processing; or two semesters of college work (or its equivalent) in a modern foreign language plus 6 units of statistics and/or electronic data processing.

## UNITED STATES CONSTITUTION REQUIREMENT

The United States Constitution (including California state constitution and local government) requirement for graduation should be fulfilled by Pol Sc 11 or Pol Sc 1A-B or 101.

## 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 1A-B, 110 or 114, 127, 156 .....	15
Political science electives (ud), excluding Pol Sc 101, 102, 124, 129, 172, 180...	15
Electives (ud), approved by the adviser, in at least three of the following disciplines: economics, English, geography, history, philosophy, psychology, anthropology, or sociology .....	12
	42
 <b>Public Administration</b>	
Pol Sc 1A-B, 164A-B .....	12
Elect from: Pol Sc 152, 156 .....	3
Elect from: Pol Sc 161, 163, 167, 169, 174T .....	3
Elect from: Pol Sc 114, 157 .....	3
Elect from: Pol Sc 135, 141, 144, 146 .....	3
Elect from: Soc 145, 155, 157, 163; Crim 132 .....	6
Elect from: Econ 110, 131, 170, 174, 180 .....	6
	36

**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 1A-B; 110 or 114 .....	9
Political science electives (ud), excluding Pol Sc 101, 102, 124, 129, 172, 180	9
Electives (ud) in anthropology, economics, English, geography, history, philosophy, psychology, or sociology .....	6
	<hr/> 24
 <b>Public Administration</b>	
Pol Sc 1A-B, 164A-B .....	12
Elect from: Pol Sc 152, 156 .....	3
Elect from: Pol Sc 161, 163, 167, 169, 174T .....	3
Elect from: Soc 157, 163, Crim 132 .....	3
Elect from: Econ 110, 131, 180 .....	3
	<hr/> 24

**CERTIFICATE IN PUBLIC ADMINISTRATION**

The certificate in public administration is offered to persons interested in training for work in public service. Applications for admission to the program must be approved by the Political Science Department. The certificate in public administration is granted upon completion of an approved program of 23 units with a grade-point average of 2.5 (on a four grade-point system). For information on course requirements, consult the department adviser.

**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 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.

*Courses***POLITICAL SCIENCE****1A-B. Comparative Government (3-3)**

Full-year sequence meets the United States Constitution and California state and local government requirement for general education. Essentials and comparative features of major governments of the world. (A) Government and politics of Great Britain, France, and Russia. (B) Politics and government of Switzerland, and the United States; federal, California state and local government relationships.

**11. American Government and Institutions (3)**

Meets the United States Constitution requirement for general education; federal, California state and local government. Not open to freshmen or to students with credit in Pol Sc 1A-B or 101. Government within the context of society; relevant studies in economics, sociology, anthropology, history, psychology organized around a set of governmental questions.

**101. American Constitution, Institutions and Ideals (3)**

Meets the United States Constitution requirement for general education. Not open to students below second semester sophomore or with credit in Pol Sc 1A-B, 11, or equivalent. Executive, legislative, and judicial functions of our government under the constitution; federal, California state and local governmental relationships.

**102. California Government and Institutions (1)**

Not open to students with credit in Pol Sc 1A-B, 11, 101, or equivalent. Open only to students who have satisfied United States Constitution requirement but have not satisfied California state and local government requirement. Examination of legislative, executive, judicial, and local government problems in California.

**110. History of Political Thought to Machiavelli (3) (Former Pol Sc 112A)**

Prerequisite: Pol Sc 1A-B, or 11, or permission of instructor. Development of political thought from Plato to Machiavelli.

**111. History of Political Thought Since Machiavelli (3) (Former Pol Sc 112B)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Development of political thought from Machiavelli to the present.

**114. American Political Thought (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Development of American political philosophy from its European foundation to the present; geographic, economic, social and cultural influences on American political ideas; effect on governmental policies and political institutions.

**124. Foundations of National Power (2)**

Not open to majors or minors in political science. Prerequisite: upper division standing. Major factors underlying international tensions—nationalism, imperialism, and communism; attempts to alleviate these tensions; balance of power concepts; the superpowers United States and the USSR.

**126. International Organizations (3)**

Prerequisite: Pol Sc 127 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.

**127. International Relations (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Analytical introduction to international relations; nationalism; imperialism; racial, population, and economic factors; war; settlement of international disputes by methods other than war; foreign policies of the major powers.

**128. Contemporary World Politics, 1914 to the Present (3)**

Prerequisite: Pol Sc 1A-B or 11 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.

**129. Contemporary International Problems (2; max total 4)**

Prerequisite: Pol Sc 1A-B, upper division standing, permission of instructor. Reading, research, and discussion of current international problems.

**132. The Conduct of American Foreign Affairs (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Formulation and execution of foreign policy; constitutional framework; role of the President and the executive branch, Congress, pressure groups and public opinion; contemporary problems and policies.

**135. Soviet Institutions (3)**

Prerequisite: Pol Sc 1A-B, Hist 137, 138, or permission of instructor. The Soviet State since 1918; political aspects of Soviet institutions.

**136. Soviet Foreign Policy (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Sources of Soviet foreign policy, historical and ideological; purposes and formulation of policies; *cold war* policies and practices, attitudes toward East-West tensions, colonialism, underdeveloped areas, neutralism, disarmament; contest for power with Red China; current trends.

**139T. Topics in International Relations (1-4; max total 8 if no topic repeated)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Possible topics include foreign policies of underdeveloped countries, neutralism and nonalignment, military aspects of foreign policy, communist foreign policies, and regionalism.

**141. Governments of the Commonwealth (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Commonwealth system and the nations composing it; Australia, New Zealand, Canada, and India; role of emerging nations within the system.

**144. The Government of England (3)**

Prerequisite: Pol Sc 1A or 11 or permission of instructor. Constitutional history since 1900, contemporary political parties, and governmental machinery of the United Kingdom.

**146. Latin-American Governments (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Political evolution of the foremost Latin-American republics; racial, cultural, economic, and geographic factors; constitutional history and development of political institutions and parties.

**149T. Topics in Comparative Government (1-4; max total 8 if no topic repeated)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Possible topics include parliamentary systems, problems and goals of developing nations, federal systems, comparative local government, parties and pressure groups, and multi-party systems.

**152. Political Parties and Pressure Groups (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. History and characteristics of political parties and pressure groups; their interaction and influence upon nominations, and elections, upon executive and legislative branches of federal, state, and local government.

**153. Dynamics of Political Behavior (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. The analysis of political behavior.

**155. The American Presidency (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Origin and concepts of the office; sources of power; role of the President in foreign and domestic affairs; future of the Presidency.

**156. American Governmental Process (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Contemporary problems and issues of American government.

**157. United States Constitution: Growth and Development in Theory and Practice (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Law of the Constitution and its underlying political theory, with leading cases.

**159T. Topics in American Government and Politics (1-4; max total 8 if no topic repeated)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Possible topics include federalism, separation of powers, public law, legislatures, executives, voting behavior, public policy formation, leadership, and bureaucratic politics.

**161. State and County Government (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. The organization, structure, powers, and functions of state and county governments.

**163. Municipal Government and Administration (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Organization, powers, and functions of city government; types of city charters, relationship between city and state government; police and fire protection, education, water supply, health and sanitation, city planning, debts and taxation, public utilities.

**164A-B. Public Administration (3-3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. (A) Policy and administration; administrative and adjudicative responsibility; planning; budgeting; public relations. (B) Administrative organization; management; personnel administration; foreign administrative systems.

**165. Public Personnel Administration (2)**

Prerequisite: Pol Sc 1A-B, 164A-B; or permission of instructor. American personnel administration; job recruitment and classification; merit test construction and analysis; salary plans and grades; building employee morale and efficiency, on-job training programs; promotions, demotions, dismissals, retirement programs.

**167. Comparative Administration (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Crosscultural and functional comparisons of administrative institutions including personnel and budget systems; influence of political, economic, and social pressures on administration policy formation and the administrative process.

**169. Finance Administration and Fiscal Management (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Financial aspects of government including fiscal organizations and intergovernmental financial relationships. Financial management of governmental units, alternative revenue sources; tax enforcement, budgeting, debt management.

**170. Planning (3)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Planning process in government and role of the planner in a democratic society; planning as a line of function in city, county, and area government; planning boards and commissions.

**172. Urban Renewal and Metropolitan Problems (2; max total 4)**

Limited to students who can arrange field trips. Prerequisite: Pol Sc 1A-B, or 101, or permission of instructor. Administration of urban renewal programs in cities and counties; concept of the workable program and other requirements for federal aid; problems of intergovernmental cooperation in local and metropolitan areas, housing, planning, and redevelopment programs.

**174T. Topics in Public Administration (3; max total 6 if no topic repeated)**

Prerequisite: Pol Sc 1A-B or 11 or permission of instructor. Intergovernmental relationships, organization and management problems in public agencies and techniques employed to solve them; problems commonly encountered in finance, personnel, and planning administration, decision making.

**180. Internship in Public Administration (2-6; max total 6)**

Prerequisite: Pol Sc 1A-B or 11 and permission of instructor. Supervised work and project experience with government agencies; government problems and procedures. (1 weekly seminar; minimum of 3 field hours per unit)

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

See *Regulations and Procedures—Independent Study*.

**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*)

**212. Seminar in Political Theory (3; max total 6 if topics not repeated)**

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 127, permission of instructor. Research and analysis in an area of international politics: theory, law, organization, conflict resolution, foreign policy formulation.

**240. Seminar in American Government (3; max total 6)**

Prerequisite: Pol Sc 1B, 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.

**249. Seminar in Comparative Government (3; max total 6)**

Prerequisite: Pol Sc 1A-B, 127, and permission of instructor. Advanced level synthesis of basic concepts, issues, and problems of comparative government.

**264. Seminar in Public Administration (3; max total 6 if topic not repeated)**

Prerequisite: permission of instructor. Problems in administrative analysis and organization, tools and techniques of administrative research, interpretation and application of research findings.

**269. Seminar in Public Law (3; max total 6 if topic not repeated)**

Prerequisite: Pol Sc 114, 157, 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.

**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: Lindquist (Chairman), Abou-Ghorra, W. Holder, Leavitt, H. E. Mad-den, Powell

Associate Professors: Burton, Button, Cooper

Assistant Professors: Breen, Coe, Grossman, Jennings, Kalb, Kirtley, Moerk, Pieper, J. M. Smith

Part-time: Berry, Coleman, Graves, E. Holder, T. Nickel, J. J. Smith, Tenney, Willemsen, Wolff, Ziefert

The Psychology Department offers work leading to the bachelor of arts and the master of arts degrees. One undergraduate core of courses serves all psychology majors. 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 preprofessional programs in law, dentistry, medicine, and the ministry, see the *Preprofessional Preparation* section and consult an adviser in the Psychology Department.

### PSYCHOLOGY MAJOR

	<i>Units</i>
Psych 25, 66, 101, 102, 110, 118.....	18
Psychology electives .....	18
(Recommended electives in preparation for graduate work: Psych 104, 163, and at least three courses from Psych 108, 117, 131, 135, 137, 145, 150, 151, 152)	
	—
	36

*Additional Requirements:* 12 units from at least three fields—anthropology, biological science, literature, foreign language, mathematics, philosophy; courses must be upper division except in foreign language and must be in addition to general education requirements. At least two years of French, German, or Russian are recommended in preparation for graduate work.

### PHILOSOPHY-PSYCHOLOGY MAJOR

	<i>Units</i>
Psych 25, 66; 3 units from Psych 108, 110, 133; 9 units of psychology (ud).....	18
Philosophy (ud) .....	16
	—
	34

### PSYCHOLOGY MINORS

#### General Psychology Minor

Psych 25, 66, 101; 102 or 118.....	12
Psychology electives .....	9
	—
	21

*Recommended:* Math 51.

#### Psychology Minor for Speech Correction-Audiology

Psych 66, 111, 145.....	9
Elect from: Psych 25, 119, 120, 135, 152, 161, 168, 175.....	12
	—
	21

**CREDENTIAL PROGRAM**

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

**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.

**Courses****PSYCHOLOGY**

*Note: Psych 7 or 10 is prerequisite to all upper division psychology courses.*

**7. Introduction to Psychology (3)**

Meets the psychology requirement for general education. Not open to students with more than 28 units. Individual approach to problems of adjustment; scientific principles of psychology in perception, learning, motivation, emotions, intelligence, aptitudes, and personality.

**10. General Psychology (3)**

Meets the psychology requirement for general education. Not open to students with 28 or fewer units or to students with credit in Psych 7. Fundamental principles of the study of behavior and experience. (2 lecture, 3 lab hours)

**16. Personal and Social Adjustment (3)**

Not open to freshmen. Recommended: Psych 7 or 10. Personality factors as they relate to problems of adjustment.

**25. Elementary Statistics (3)**

Prerequisite: two years high school algebra or Math 29. Descriptive statistics and elementary hypothesis testing in the behavioral sciences. (2 lecture, 2 lab hours)

**66. Differential Psychology (3)**

Basic considerations in the problems of individual and group data, heredity and environment, genetics and maturation.

**100T. Undergraduate Seminar in Psychology (1-4; max total 8 if no  
topic repeated)**

Prerequisite: nine units in psychology, permission of instructor. Seminar in special areas; new developments in psychology such as humanistic psychology, behavioral genetics, social issues in psychology, psycholinguistics.

**101. Behavioral Research I (3)**

Prerequisite: Psych 25, 66. Experimental methodology course to introduce techniques of the scientific method; research pursuits in psychophysics, and in physiological, learning, and comparative psychology. (2 lecture, 3 lab hours)

**102. Behavioral Research II (3)**

Prerequisite: Psych 101. Techniques used in studies and experiments in social, personality, developmental, and clinical psychologies. (2 lecture, 3 lab hours)

**103. Personality (3)**

Basic theoretical concepts.

**104. Intermediate Statistics in Psychology (3)**

Prerequisite: Psych 25 or equivalent. Advanced procedures in analysis and interpretation of psychological data. (2 lecture, 2 lab hours)

**108. Foundations of Behavioral Science (3)**

Prerequisite: Psych 66 or permission of instructor. Critical evaluation of the bases of psychological theories and their relationship to areas of the philosophy of science.

**110. History and Systems (3)**

Prerequisite: Psych 66 or permission of instructor. Philosophical and historical background of psychology through the first quarter of the twentieth century; establishment of earlier schools and systems of psychology.

**X 111. Mental Hygiene (3)**

Basic processes in adjustment; mental health and social problems; application of principles of emotional health.

**116. Analytical Psychologies (3)**

Prerequisite: permission of instructor. The contributions of Freud, Adler, Jung and other depth-psychologists.

**117. Personality in Nature and Culture (3)**

Hereditary, physiological, geographical, social and cultural factors in the development of personality; theories of personality.

**118. Developmental Psychology (3)**

Open only to psychology majors and minors; not open to students with credit in Psych 119, 120, or 123. The psychology of development; infancy, childhood, adolescence, maturity, and old age.

**X 119. Child Psychology (3)**

The dynamics of development and adjustment.

**X 120. Adolescent Psychology (3)**

Adjustment of youth to self and society.

**X 123. Maturity and Old Age (3)**

Psychological study of maturity and old age; physiological and sociological considerations.

**131. Motivation (3)**

Prerequisite: Psych 66 or permission of instructor. Factors responsible for instigation and modification of behavior. (2 lecture, 3 lab hours)

**133. Contemporary Psychological Theories (3)**

Prerequisite: Psych 110; 18 units of psychology or permission of instructor. Analysis and development of current theoretical emphasis in psychology; contemporary psychological literature.

**135. Learning (3)**

Prerequisite: Psych 101 or permission of instructor. Principles of Learning. (2 lecture, 3 lab hours)

**137. Sensation and Perception (3)**

Prerequisite: Psych 101 or permission of instructor. The interpretation of sensory data. (2 lecture, 3 lab hours)

**139. Thinking and Language (3)**

Prerequisite: Psych 101 or permission of instructor. Communication and other symbolic processes. (2 lecture, 3 lab hours)

**141. Psychology of Religion (3)**

The psychological foundations of religious experience.

**145. Social Psychology (3)**

The interaction of individuals in groups. (2 lecture, 2 lab hours)

**146. Methods in Social Psychology (3)**

Prerequisite: Psych 25 or equivalent; Psych 145 (or concurrently). Basic methods in survey research; group dynamics; communication studies; attitude scaling. (2 lecture, 3 lab hours)

**147. Psychology of Small Groups (3)**

Basic principles of social interaction in small group situations; problems of group leadership and communication; development of attitudes and skills for effective group participation.

**149. Mathematical Models in Psychology (4)**

Prerequisite: Psych 25 or permission of instructor; Math 51 recommended. Mathematical models as used in psychological theory, with applications to particular experimental situations in the areas of learning, perception, decision making, and social psychology.

**150. Comparative Psychology (3)**

Prerequisite: Psych 101 or permission of instructor. Comparative functions and behavior of animals. (2 lecture, 3 lab hours)

**X 151. Physiological Psychology (3)**

Prerequisite: Psych 101 or permission of instructor. Relationship between physiological processes and behavior. (2 lecture, 3 lab hours)

**X 152. Abnormal Psychology (3)**

Theoretical examination of origins, symptoms and treatments of personality disturbances.

**X 152F. Clinical Psychopathology (3)**

Prerequisite: permission of instructor. Case material with clinical analyses from psychiatric viewpoint. (2 lecture, 2 clinical lab hours)

**153. Psychology of the Criminal (3) (See Crim 153)**

**161. Clinical Psychology (3)**

Training, research, theoretical issues, and ethics in clinical psychology and clinical techniques.

**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.

**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.

**181. Industrial Psychology (3)**

Occupational assessment; training procedures; production efficiency; morale determinants; human engineering; decision processes; organization theory.

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

**200. Seminar in Psychology (3; max see below)**

May be repeated with different topics. Prerequisite: permission of instructor. Seminars in psychodynamics, personality, psychological measurement, counseling and psychotherapy, genetic psychology, experimental psychology, social psychology, applied psychology, learning, research design, physiological and comparative psychology, theoretical problems.

**201. Seminar in Experimental Methods (3)**

Prerequisite: Psych 102, 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)

**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)

**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.

**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. Advanced Psychological Theory (3)**

Prerequisite: Psych 133, 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: Psych 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.

**265. 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)

**265. 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.

**266A. Projective Techniques (3)**

Prerequisite: Psych 152, 161, 265, permission of instructor. Seminar on basic assumptions and applications of projective devices.

**266B. Projective Techniques (3)**

Prerequisite: Psych 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 264, 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.

**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 (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. 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-Sociology, Economics, Geography, History, Political Science.

**SOCIAL SCIENCE MAJOR**

The following requirements are in addition to the general education requirements in social science.

	<i>Units</i>
Econ 1A .....	3
Geog 3 or 4 .....	3
Hist 1, 2 .....	6
Soc 1 or Anthro 2 .....	3
From ud Anthro-Soc, Econ, *Geog, Hist, Pol Sc:	
Approved electives in one department.....	15
Approved electives in other departments.....	9
	39

\* May not include Geog. 5, 7, 105, 108, 109, 110, 111, 112, 115, 130, 135T, 171, 180, 181, 182.

**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*.

## SPEECH ARTS DEPARTMENT

Professors: P. Walker (Chairman), Campbell, Highlander, Lombard, Taylor, J. Wright

Associate Professors: J. Byron, Burris, G. Graham, Henderson, Loring, Randall, D. Wilson

Assistant Professors: Adams, Alden, Fong, Fulkerson, Loganbill, Natharius, Newcomer, Newton, Salgado, Stephens, Toscan, T. Walker, Walton

Lecturers: Hegrenes, McGuire

Part-time: T. Cole, B. Graham, Ozier, Valdez, K. Wright

The Speech Arts Department offers majors for those who seek professional qualification in one or more of the specialized fields of speech: dramatic art, radio-television broadcasting, public address-communication, and speech correction-audiology. 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. The master of arts degree is available under the general provisions listed in this section.

## SPEECH TEST

(See *Entrance Examinations*)

## MAJORS AND MINORS

The Speech Arts Department offers bachelor of arts degree majors and minors in dramatic art, radio-television broadcasting, and speech with three options.

The *dramatic art* major provides training for play directors and playwrights, for community recreational leadership, and for personal development, and is a testing ground for professional theatre ambitions.

The *radio-television* major provides for an understanding and critical appraisal of the media as forces of social, educational, and economic significance. It provides preparation for careers in commercial and educational broadcasting and for teaching. It combines theory with broadcast experience opportunities.

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 speech pathology and audiology. 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.

## MAJORS

**Dramatic Art**

	<i>Units</i>
Spch 10-110, 20 .....	5
Drama 15-115, 33, 34-134, 133 or 140, 139, 180, 185A or B .....	20
Approved electives .....	11
	—
	36

**Radio-Television Broadcasting**

Spch 10-110, 20 .....	5
R-TV 15-115, 40, 41, 44, 141A, 144, 145, 147 .....	20
Approved electives .....	15
	—

<b>Speech (Public Address and Communication) Option I</b>		<i>Units</i>
Spch 10-110, 15-115, 20, PAC 24 or 26, 25, 121, 125, 126, 170 or 171, 175	28	
Approved electives	8	
	—	
	36	
<b>Speech (Public Address and Communication) Option II</b>		
Spch 10-110, 20, 134, PAC 24 or 26, 121, 126	17	
Drama 137, Sp Corr 151, 157	8	
Approved electives	11	
	—	
	36	
<b>Speech (Speech Correction and Audiology) Option III</b>		
Spch 10-110, 20, PAC 121 or 126	8	
Sp Corr 150, 151, 152, 156, 157, 162	18	
Drama 137	2	
Psych 168	3	
Approved electives	5	
	—	
	36	
Recommended courses: Psych 119, 145, Soc 1, 165.		

**MINORS**

<b>Dramatic Art</b>		<i>Units</i>
Spch 10-110, 20	4	
Drama 15-115, 33, 34-134, 133	11	
Approved electives	5	
	—	
	20	
<b>Radio-Television Broadcasting</b>		
R-TV 15-115, 40, 41 or 44, 147	12	
Approved electives	12	
	—	
	24	
<b>Speech (Public Address and Communication) Option I</b>		
Spch 15-115, PAC 25, 121, 125 or 126, 170 or 171, 175	17	
Approved electives	3	
	—	
	20	
<b>Speech (Public Address and Communication) Option II</b>		
Spch 20, PAC 121, 126	9	
Drama 137, Sp Corr 151, 157	8	
Approved electives	3	
	—	
	20	
<b>Speech (Speech Correction and Audiology) Option III</b>		
Spch 20	3	
Sp Corr 150, 151, 152, 157, 162	15	
Approved electives	2	
	—	
	20	
Recommended courses: Psych 119, Soc 1.		

**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*.

**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.

	<i>Units</i>
A Ed 160, Psych 168.....	6
Sp Corr 150, 151, 152, 153, 154, 156, 157, 162, 163, 164.....	30
Approved elective .....	3
	39
Professional Requirements: Sp Corr 255 (4 un), A Ed 164 (4 un), approved elective (2 un).....	10
	49

(Recommended: Psychology minor for speech correction and audiology)

**MASTER OF ARTS DEGREE**

The graduate program for the master of arts degree in speech is based on the equivalent of the undergraduate major or minor in speech at Fresno State College. From 18 to 24 of the 30 units required for the degree must be in speech. For specific requirements, consult the head of the 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.

*Courses***DRAMATIC ART****15. Dramatic Arts Laboratory (1-2; max total 4)**

Prerequisite: permission of instructor. Group laboratory experience in presentation of major productions for public performance. (4-8 hours arranged)

**33. Techniques of Acting (3)**

Prerequisite: Spch 20 or permission of instructor. Fundamental techniques and theories of acting. (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. Theatre Arts (2)**

Study of the theatre arts; major styles of dramatic composition and production; analysis of representative examples.

**115. Advanced 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)

**131. Playwriting (2; max total 6)**

Prerequisite: permission of instructor. Play analysis, exploration of folk material, fundamentals of playwriting, critical analysis and revision of manuscripts, experimental production of completed scripts. (2 lecture-lab and arranged hours)

**133. Advanced Acting (3) (Former Spch 139A)**

Prerequisite: Drama 33 or permission of instructor. Advanced techniques of acting. (2 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 performance. (3 lecture-lab and 9 arranged hours)

**135. Make-up for Theatre (2)**

Theory of make-up for theatre; laboratory applications (2 2-hour activity and 3 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.

**138. Children's Theatre (2) (Former Drama 159)**

Theories of children's theatre and application to problems in production; preparing plays for major public performance. (1 2-hour activity and 6 hours arranged)

**139. 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. (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. (2 2-hour activity and 4 arranged hours)

**180. Design in the Theatre (3; max total 9) (Same as Art 180)**

Prerequisite: Drama 34 or permission of instructor. Theory and laboratory application in scene design, costume, stage and television lighting. (lab hours arranged)

**184. Readings in Dramatic Literature (2; max total 6)**

Open to upper division students of all departments. Prerequisite: permission of instructor. Reading and discussion of great plays of history.

**185A-B. History of the Theatre (3-3)**

(A) History of European theatre and component arts from ancient Greece through the mid-nineteenth century; analysis of representative examples. (B) From Ibsen to the present, including history of theatre in America; analysis of representative examples.

**188T. 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 (2; max total 6)**

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.

**194T. Major Writers: Shakespeare (4) (See Engl 194T: Shakespeare)**

**200 series.** Graduate courses are listed under *Speech*.

**PUBLIC ADDRESS AND COMMUNICATION**

*Note: PAC courses were formerly listed under Speech.*

**24. Persuasion (3) (Former Spch 24)**

Prerequisite: Spch 21 or permission of instructor. Persuasion viewed as a social tool for resolving controversy and forming opinions through presentation of and listening to public speeches.

**25. Argumentation (3) (Former Spch 25)**

Prerequisite: Spch 21 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.

**26. Group Discussion (3) (Former Spch 26)**

Prerequisite: Spch 21 or permission of instructor. Communication in group thinking and problem solving through preparation and presentation of panels and symposia on public issues.

**121. Advanced Oral Communications (3) (Former Spch 121)**

Prerequisite: Spch 21 or permission of instructor. Study and application of the theories of oral communication at an advanced level.

**125. Rhetorical Theory (3) (Former Spch 125)**

Examination and analysis of classical, renaissance, and modern rhetorical theory for the purpose of identifying the theories of speech.

**126. Group Communication (3) (Former Spch 126)**

Prerequisite: Spch 21 or permission of instructor. Interrelationships between social groups and the communication process as discovered in public discussions.

**127. Dynamics of Leadership (3) (Former Spch 127)**

Theory and practice of leadership in various types of organization; functions of leadership in group dynamics; panels, discussions, and role playing.

**170. History of Public Address: Ancient and British (3) (Former Spch 170)**

Not open to students with credit in Spch 124. Greek, Roman and British public address; analysis of selected speeches evaluated within the intellectual, social, political, and historical context of those times.

**171. History of Public Address: American (3) (Former 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.

**174. Advanced Public Speaking (3)**

Prerequisite: Spch 21. Advanced principles of expository and persuasive speaking; development of skills through analysis, preparation, organization, and delivery of various types of speeches.

**175. Rhetorical Criticism (3)**

Not open to students with credit in PAC 125 prior to fall 1968. Examination of methods of the classical critics through the contemporary theorists in rhetorical criticism for the purpose of establishing standards for rhetorical analysis.

**188T. Topics in Public Address and Communication (3; max total 9)**

Prerequisite: permission of instructor. Selected topics in one of the following areas: communication, debate, oral interpretation, public address.

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

See *Regulations and Procedures—Independent Study*.

**200 series.** Graduate courses are listed under *Speech*.

**RADIO-TELEVISION****15. Radio-Television Laboratory (2; max total 4)**

Prerequisite: permission of instructor. Laboratory experience in major productions for closed circuit or broadcast performance. (4-8 hours arranged)

**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. Fundamentals of radio production techniques and program planning. (3 lecture-lab and arranged hours)

**44. Television Production (3)**

Prerequisite: R-TV 40. Fundamentals of television production techniques and program planning. (3 lecture and arranged hours)

**115. Advanced Radio-Television Laboratory (2; max total 4)**

Prerequisite: permission of instructor. Laboratory experience in major productions for closed-circuit or broadcast performance. (4-8 hours arranged)

**128. Motion Picture Evaluation (2)**

Criteria for motion picture selection; use of reviews and judgment by critics and organizations; critical observation; appreciation and enjoyment. (2 lecture-lab and arranged hours)

**129. Telefilm Production (2; max total 4)**

Prerequisite: R-TV 128, permission of instructor. Theoretical and practical application of visualization techniques as applied in the media of television film. (lab hours arranged)

**141A-B. Radio and Television Continuity Writing (3-3)**

Prerequisite: Engl 1. Application of principles of creative writing to radio and television broadcasting; analysis and writing of radio and television plays; writing skills and standards of criticism. (3 lecture-lab and arranged hours)

**142. Radio and Television News Broadcasting (3) (Same as Jour 142)**

Prerequisite: Engl 1. All aspects of radio and television news broadcasting; analysis and use of the techniques in editing and writing. (2 lecture, 2 lab hours arranged)

**143. Radio and Television in Education (2) (Same as A Ed 143)**

Philosophy, objectives, and uses of radio and television in education; place of radio and television in the curriculum, classroom utilization, out-of-school listening and viewing; advantages and limitations of the media; evaluation of school broadcasts.

**143L. Radio and Television Education Laboratory (1) (Same as A Ed 143L)**

Prerequisite or concurrently: R-TV 143. Experience in production of educational radio and television programs.

**144. Advanced Television Production (2)**

Prerequisite: R-TV 44. Organization and planning of the television production. (2 lecture-lab and arranged hours)

**145. Radio and Television Station Operation and Programming (2)**

Prerequisite: R-TV 44. Organization, management, and programming of radio and television stations; correlation of department functions; rules and regulations governing station operation. (2 lecture-lab and arranged hours)

**147. Radio and Television Direction (2; max total 8)**

Prerequisite: R-TV 41 or 44, permission of instructor. Radio direction: planning and organization of production elements and direction of radio programs for broadcast over local stations. Television direction: planning and organization of production elements and direction of television programs on closed-circuit and over local stations. (lab hours arranged)

**149. Radio and Television Performance (3)**

Prerequisite: R-TV 40 or 44. Role of the broadcast performer; types of broadcast performance; development of professional skills and standards; laboratory or broadcast participation. (2 lecture, 2 lab hours arranged)

**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.

**188T. Topics in Radio-Television (3; max total 9)**

Prerequisite: permission of instructor. Selected in one of the following areas: cinema, radio, television.

**189. Projects in Radio-Television Production (2; max total 6)**

Prerequisite: permission of instructor. Individual projects in all phases of production for closed-circuit or broadcast performance. (4 hours activity)

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

See *Regulations and Procedures—Independent Study*.

**200 series.** Graduate courses are listed under *Speech*.

**SPEECH****10. Administration of Speech Arts Programs (2)**

Organization and management of public events in speech arts. (2 lecture and 7 arranged hours)

**15. Speech Arts Laboratory (1-2; max total 4)**

Prerequisite: permission of instructor. Group laboratory experience in major presentations and programs in public address and communication. (1 lecture, 6 hours arranged)

**20. Fundamentals of Voice and Articulation (3)**

Primarily for majors and minors in the speech arts. Principles of voice and articulation with demonstration in various aspects of oral communication and public address.

**21. Fundamentals of Oral Communication (3)**

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.

**22. Fundamentals of Interpretation (3)**

Discovering and communicating intellectual and emotional meaning of the printed page through preparation and presentation of selected readings from prose, poetry, and drama.

**76. Problems in Oral Expression (2)**

Primarily for prospective teachers. Oral presentation of materials; analysis and elimination of individual limitations in oral expression.

**110. Administration of Speech Arts Programs (2; max total 4)**

Organization and management of public events in speech arts. (2 lecture and 7 arranged hours)

**115. Advanced Speech Arts Laboratory (1-2; max total 6)**

Prerequisite: permission of instructor. Group laboratory experience in major presentations and programs in public address and communication. (1 lecture, 6 hours arranged)

**122. Advanced Interpretation (3)**

Study and application of theories of oral interpretation through preparation and presentation of selected readings.

**130. Choral Reading (2; max total 4)**

Selection of poetry appropriate for choral reading on various educational levels; role of choral reading in speech teaching.

**134. Structure of English (4) (See Ling 134)****135. General Linguistics (4) (See Ling 135)****137. American English (3) (See Ling 137)****158. 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.

**188T. Topics in Speech (3; max total 9)**

Prerequisite: permission of instructor. Selected topics in speech education.

**189. Projects in Production (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***(See Course Numbering System—Definitions and Eligibility)***200. Introduction to Graduate Study (2)**

Prerequisite: speech minor or equivalent. Seminar in research procedures and materials in speech. Required of all majors in speech arts during the first semester of graduate work.

**210. Graduate Survey in Speech Arts (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.

**253. Seminar in Functional Speech Disorders (3; max total 6)**

Prerequisite: Sp Corr 153, 155; permission of instructor. Projects in library research or in experimentation relating to functional speech disorders such as articulation, delayed speech, stuttering, and functional voice disorders.

**254. Seminar in Organic Speech Disorders (3; max total 6)**

Prerequisite: Sp Corr 154, 155; permission of instructor. Projects in library research or in experimentation relating to organic speech disorders such as cleft palate, cerebral palsy, aphasia, and organic voice disorders. (3 lecture-lab and arranged hours)

**255. Advanced Clinical Practice (2; max total 4)**

Prerequisite: Sp Corr 153, 154, 155; permission of instructor. Supervised clinical practice in diagnosis and therapy of complex speech and hearing problems; causative factors, outlining plan of therapy, counseling parents, referral considerations. (2 lecture-lab and arranged hours)

**260. Seminar in Audiology (3; max total 6)**

Prerequisite: Sp Corr 164. Projects in library research or experimentation.

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

See *Regulations and Procedures—Independent Study*.

**299. Thesis or Project (2-6; 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)****SPEECH CORRECTION AND AUDIOLOGY****150. Introduction to Speech Correction (3) (Same as A Ed 150)**

Problems of speech correction in education; classification of speech defects, common types, causes and therapeutic procedures; development of normal speech in the child; speech correction in public schools; role of classroom teacher in speech correction program.

**151. Phonetics of American English (3)**

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. (2 lecture, 2 lab hours)

**152. Evaluation of Speech and Hearing Disorders (3)**

Prerequisite: Sp Corr 150, 151. Diagnostic and therapeutic procedures applicable to a broad spectrum of speech and hearing problems; tests and methodologies utilized in speech correction. (2 lecture, 2 lab hours)

**153. Stuttering (3)**

Prerequisite: Sp Corr 150, 152 or permission of instructor. Theories and therapies; psychological and educational concepts of stuttering; parent-child relationships. (2 lecture, 2 lab hours)

**154. Speech Pathology (3)**

Prerequisite: Sp Corr 152. Causation and therapy procedures for organic speech disorders, including cleft palate, cerebral palsy, aphasia, voice disorders.

**155. Clinical Practice in Speech and Hearing Therapy (2; max total 6)**

Prerequisite: Sp Corr 152, permission of instructor. Supervised clinical practice in speech and hearing therapy with a variety of speech and hearing problems; diagnosis of speech deficiencies, procedures of referral to other agencies, parent counseling; case records. (6 hours arranged)

**156. Voice Science (3) (Same as Ling 156)**

Physical, physiological, and neurological bases of speech; elements of acoustic phonetics.

**157. Psychology of Speech Development (3)**

The normal process of speech development in children; sociological, psychological, and educational concepts relating to the learning of speech. (2 lecture, 2 lab or field hours)

**158. Principles of Audiology (3) (Same as H Sc 162)**

Anatomy, physiology, and neurology of the hearing mechanism; medical aspects of deafness and surgical treatment of hearing loss; psychological and social factors involved.

**160. Principles of Aural Rehabilitation (3) (Same as A Ed 151)**

Prerequisite: Sp Corr 162 or permission of instructor. Psychological, educational, and sociological implications of hearing impairments. Hearing conservation programs; education of the hearing impaired. (2 lecture, 2 lab hours)

**164. Audiometry (3)**

Prerequisite: Sp Corr 162 or permission of instructor. Concepts on perception of speech; testing procedures utilized in detection and evaluation of hearing loss; application of testing procedures for diagnostic and rehabilitative purposes.

**1881. Topics in Speech Correction (3; max total 9)**

Prerequisite: permission of instructor. Selected topics may include: audiology, phonetics, speech pathology, voice science.

**200 series.** Graduate courses are listed under *Speech*.



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# SCHOOL OF BUSINESS

McKee Fisk, Dean

Assistant Dean.....Robert E. Hampton  
Director, Bureau of Business Research and Service.....Marshall E. Minich  
Director, Institute of Industrial Relations.....

## ACCOUNTING AND QUANTITATIVE STUDIES DEPARTMENT

Professors: Tidyman (Chairman), W. Parker, Wayne  
Associate Professors: Bedrosian, Emerson, Titus  
Assistant Professors: Costis, Drummond, Hill, Posey, F. Taylor  
Part-time: Cason, Daniel, S. Lewis, J. Shockley

## FINANCE AND INDUSTRY DEPARTMENT

Professors: Carr (Chairman), Austin, Fisk, Pierson  
Associate Professors: Benson, Brooks, I. Davis, Dodds  
Assistant Professors: Blankenship, Egenolf, O'Brien  
Adjunct Professor: Chawner  
Lecturer: Minich  
Part-time: Blumberg, Gaab, Pickel, Potter, Prasad

## MANAGEMENT AND MARKETING DEPARTMENT

Professors: Halper, Hampton, Jepsen  
Associate Professors: Kruger (Acting Chairman), Reighard  
Assistant Professors: D. Anderson, Brock, Hasan, R. Johnson, Singh  
Adjunct Professor: Chute  
Lecturer: Pietrowski  
Part-time: E. Andrews, Berman, Kehlenbeck

## OFFICE ADMINISTRATION DEPARTMENT

Professor: H. Rohrer (Chairman)  
Associate Professors: Haggblade, Wight  
Assistant Professors: Agnew, Schramm  
Part-time: Badasci

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 art of business management; an understanding of the role and responsibility of business in present day society; a foundation of basic background materials for participation in the American enterprise system; and such proficiency in technical skills and information as the job market demands.

The school offers bachelor of science degree programs in the four specialized business areas of accounting, business administration, marketing, and office administration, and in agribusiness. A minor 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. Such 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 the need arises.

#### **INSTITUTE OF INDUSTRIAL RELATIONS**

In cooperation with labor and management groups in the San Joaquin Valley, the Institute of Industrial Relations offers work both on campus and off campus. It also provides opportunities for students to participate in labor relations programs and to engage in research in the field.

#### **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.

**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, insofar as possible, the general education requirements, including the appropriate and required mathematics courses, a year of principles of economics, and a year of principles of accounting. 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.

**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, processing, and marketing, as well as management and office positions in agricultural industry. The degree requires 128 units including course work in both business and agriculture.

The *business administration* major, 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. Except for office administration (which requires 42 units), a minimum of 45 upper division units is required for bachelor of science degree majors. The general regulations and general education requirements for a bachelor's degree must be completed (see *Degrees and Credentials*).

*Additional Requirements:* Econ 1A-B, Math 51 or 71 and 72 or equivalent are required of all majors in the school; Chem 2A and Physics 2A are required for the agribusiness major, business option, agricultural mechanics area; Chem 2A-B and 8 are required for the animal and plant science areas. Recommended additional courses are: Geog 3, Econ 110, Soc 1, Psych 145. Demonstrated ability in the use of the typewriter as indicated by a proficiency examination or by credit in a college typing course is also required of all majors in the school.

All majors in the School of Business are required to complete 12 units outside the school in addition to major and general education course requirements.

### MAJORS FOR BACHELOR OF SCIENCE DEGREES

(See *Additional Requirements* above)

<b>Accounting</b>	<i>Units</i>
Acct 1A-B, Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100.....	27
Bus Ad 62, Acct 120A-B, 132, 144, 162, Acct 140 or 155 or 167 or Bus Ad 162	21
Elect two courses from the following: Bus Ad 100 or Econ 100A; Bus Ad 104 or Econ 103; Bus Ad 124, 134, 135, 161.....	6
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 <b>Agribusiness (Business Option)</b>	
<i>Business Courses</i>	
Acct 1A-B, Bus Ad 100, 102, 110, 118-A-B, 133, 151, Mkt 100.....	30
Elect from: Acct 128, 132, Bus Ad 120, 124, 170, 171, 172, 177, 179, 184, Mkt 108, 140, 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>	
AH 71, 115, 116, 172, Ag 112, 136	
Elect 12 units from one category: AH 1, 22, 30, 40; DS 11A-B, 53, 102; PH 1, 32, 162, 163	
 (c) <i>Plant Science</i>	
CP 60, Ag 106, 112, 130, 136, 146	
Elect 12 units from one category: CP 11, 12, 51, 52 or 53 or 56; H 11, 12, 52 or 55, 57; OH 3, 22, 33, 53; V 11, 15, 16, 50	
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 <b>Business Administration</b>	
Acct 1A-B, Bus Ad 102, 110, 118A-B, 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. (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

*Accounting:* 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

*Agricultural Economics:* Bus Ad 170, 171, 172, 177, 179

*Business Economics:* Bus Ad 104, 105, 161, Mkt 108, Econ 103

*Economics:* Elect 6 to 12 units of upper division economics courses

*Finance:* Bus Ad 132, 134, 135, 139, Econ 131

*Insurance:* Bus Ad 143, 144

*Legal Environment of Business:* Bus Ad 119, 156, 184, Econ 174

*Marketing:* Bus Ad 105, 137, Mkt 106, 108, 117, 130, 140, 155, 176

*Office Administration:* Off Ad 103, 105, 107

*Personnel and Industrial Relations:* Bus Ad 152, 153, 154, 156, 159, Econ 150, Psych 181

*Quantitative Techniques and Applications:* Bus Ad 104, 161, 162, 165, Mkt 108

*Real Estate and Land Economics:* Bus Ad 180, 181, 183, 184, 186

*Transportation:* Bus Ad 107, 109, Econ 170

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**Marketing**

*Units*

Acct 1A-B, Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100 ..... 27

Mkt 101, 106, 108, 155 ..... 12

Elect from: Bus Ad 172, Mkt 117, 130, 140, 142, 176 ..... 12

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Recommended electives: Anthro 102, 104, 115, Acct 128, 132, Bus Ad 100, 105, 120, 137, 161, Econ 114, 170, 174, Geog 120, IA 160, 162, 166, Jour 106, 113, 145A-B, Off Ad 105, Psych 108, 145, Soc 112, 145, 155, 157

**Office Administration**

Acct 1A-B, Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100..... 27

Bus Ad 162, Off Ad 4, 103, 105, 107 ..... 15

Elect from one of the following series: ..... 9

(a) Off Ad 112, 114, 121

(b) Acct 120A or 128 or 132; 6 units from Bus Ad 137, 143, 153, 161

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**SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE MAJORS**

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-16 units per semester. Math 51, or 71 and 72, or equivalent is required. A total of 124 units must be completed for the bachelor of science degree (128 for degree in agribusiness). (See also *Degrees and Credentials*.)

**Accounting**

1st Year: Typing exam or Off Ad 1 or 2, Math 51

2nd Year: Acct 1A-B, Econ 1A-B

3rd Year: Acct 120A-B, 132, Bus Ad 62, 102, 110, 118A-B, 133, 151, Mkt 100

4th Year: Acct 144, 162, Acct electives (3 un); approved Bus Ad and Econ electives

**Agribusiness**

- 1st Year: Typing exam or Off Ad 1 or 2, Math 51, approved agriculture electives (6 un)  
 2nd Year: Acct 1A-B, Econ 1A-B, approved agriculture electives (6 un)  
 3rd Year: Bus Ad 102, 110, 118A-B, 133, 151, 170, Mkt 100, approved agriculture electives (6 un)  
 4th Year: Bus Ad 100, 172, 179, approved business electives (6 un), approved agriculture electives (12 un)

**Business Administration**

- 1st Year: Typing exam or Off Ad 1 or 2, Math 51  
 2nd Year: Acct 1A-B, Econ 1A-B  
 3rd Year: Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100, Acct elective (3-6 units)  
 4th Year: Bus Ad 100, 120, 124, approved electives (12 un)

**Marketing**

- 1st Year: Typing exam or Off Ad 1 or 2, Math 51  
 2nd Year: Acct 1A-B, Econ 1A-B  
 3rd Year: Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100, approved electives (9-11 units)  
 4th Year: Mkt 101, 106, 108, 155, approved electives (20 units)

**Office Administration**

- 1st Year: Typing exam or Off Ad 1 or 2, 4, Math 51  
 2nd Year: Acct 1A-B, Econ 1A-B  
 3rd Year: Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100, Off Ad 103, 105, approved electives (3 un)  
 4th Year: Bus Ad 162, Off Ad 107, approved electives (6 units)

**BUSINESS MINOR**

The following business minor is offered for students with majors in other departments. Satisfactory skill in the use of the typewriter as demonstrated by a proficiency examination or credit in Off Ad 1 or 2 or equivalent is required of all minors.

	<i>Units</i>
Acct 1A .....	3
Elect from: Bus Ad 102, 110, 118A, 133, 151, Mkt 100.....	6
Elect from not more than two fields (8 ud): Acct, Bus Ad, Mkt, Off Ad.....	11
	<hr/> 20

**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 or equivalent preparation 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.

### Courses

#### ACCOUNTING

##### 1A-B. Principles of Accounting (3-3)

Not open to freshmen. Accounting principles, procedures, systems, concepts; statement preparation and analysis; accounting for partnerships and corporations; cost accounting, accounting managerial controls, budgeting; decision making involving accounting data; funds flow statements.

##### 120A-B. Intermediate Accounting (3-3)

Prerequisite: for 120A, Acct 1A-B; for 120B, Math 51 (may be taken concurrently). Preparation and analysis of balance sheet and income statements; partnership and corporation accounts; basic accounting theory; theory of current and fixed assets, investments, liabilities, funds, 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.

##### 132. Cost Accounting (3)

Prerequisite: Acct 1A-B. Industrial cost accounting; general principles of job-order, process and standard cost systems; special problems.

##### 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.

##### 144. Federal Tax Accounting (3)

Prerequisite: Acct 120A. 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.

##### 155. Governmental Accounting (3)

Prerequisite: Acct 120A or 132. Accounting and financial reporting for governmental institutions, hospitals, and colleges.

##### 162. Auditing (3)

Prerequisite: Acct 120A-B (120B may be taken concurrently). Verification of accounts of a business to determine financial condition, operating results, and financial integrity of those in charge; duties and responsibilities of the auditor, his function in the executive staff and relation to the accounting department; balance sheet audit.

**167. Advanced Accounting Problems (3)**

Prerequisite: Acct 120A-B, or 120A and senior standing. Advanced accounting theory and practice; type problems in partnerships, consignments, installment sales, insurance, annuities, receiverships, branches, parent and subsidiary accounting, estates and trusts.

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

See *Regulations and Procedures—Independent Study*.

**199. Supervised Work Experience (1; max total 4)**

Open only to accounting majors. Prerequisite: permission of instructor. Supervised work experience in business and industry; analyzed in weekly class meeting.

**200 series.** Graduate courses are listed under *Business*.

**BUSINESS ADMINISTRATION****8. Introduction to Business Law (3)**

For nonbusiness students. Legal concepts common to all; rights, duties, and obligations in the law of contracts, sales and business torts; functioning of judicial institutions.

**10. Business as a Social Institution (3)**

The nature of business society and the management of firms in that society; evaluation of the relationship of business to government, labor, and the public; case studies.

**21. Business Mathematics (2)**

Not open to students with credit in Bus Ad 22, Ag 27, Math 51. Fundamental operations and arithmetical processes; equations and use of formulas; application to specialized fields.

**22. Quantitative Analysis of Business Data (3)**

Not open to students with credit in Bus Ad 102. Prerequisite: one year high school algebra. Application of mathematical processes to business: marketing, economics, finance; introduction to statistics; compilation and classification of data.

**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.

**61. COBOL Programming (1)**

Introduction to the use of a compiler, oriented toward the handling of business data; study of the structure of COBOL (Common Oriented Business Language), organization of data and files, practice in COBOL programming.

**62. Automation and Data Processing (3) (Former Bus Ad 160)**

Not open to students with credit in Engr 70, Bus Ad 61, or 160. Principles and practice in programming in a source language (presently FORTRAN); impact of automation and computers on business and society. (3 lecture, 2 lab hours)

**100. Business Economics (3)**

Prerequisite: Bus Ad 133; senior standing. Applications of economic principles in business management; measure of profit, analysis of demand, cost analysis; price, wage, and public policies; case studies.

**102. Business Statistics (3)**

Primarily for juniors. Prerequisite: Math 51 or 71 and 72 or equivalent; Econ 1A-B. Recommended: Off Ad 16. Principles and methods of statistical analysis;

application to business and economic problems; descriptive statistics, introduction to probability, statistical inference, index numbers, time series analysis, correlation and regression analysis. (3 lecture, 1 lab hour)

**104. Business Forecasting (3)**

Prerequisite: Bus Ad 102. Analysis of forecasting techniques currently utilized to estimate cyclical and secular-trend changes in both firm and industry output; correlation techniques, models, composite indexes; time series, lead-lag, and flow-of-funds analyses.

**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.

**107. Transportation Management (3)**

Prerequisite: Econ 1A-B. Movement of goods and people; comparison of alternatives; firm management; national transportation policy; significance of transportation to industrial location, pricing, and markets.

**109. Industrial Traffic Management (3)**

Prerequisite: Bus Ad 107 or Econ 170. Physical distribution systems; cost and service comparisons of transportation alternatives; impact of legal restrictions and regulatory controls. Organization and operation of traffic departments.

**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.

**118A-B. Business Law (3-3)**

Prerequisite: junior standing. (A) Sources, forms and expressions of law; general law of contracts; law of agency and employment; case studies. (B) Law of bailments, shipments; sale of personal property; negotiable instruments; personal property security; case studies.

**119. Advanced Business Law (3)**

Prerequisite: Bus Ad 118A-B or equivalent. Law of partnerships, corporations, estates, real property acquisition, conveyances and transfers; encumbrances such as easements, leases, mortgages and liens; riparian rights and boundaries; wills, administration of estates, bankruptcy, debtor and creditor relations, 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 102, 110. Problems of production management: production planning; production control; purchasing and procurement; materials planning and control; product development; plant location. Field trip required.

**129. Association Management (3)**

Prerequisite: Bus Ad 110. Principles of management and operational problems applicable to chambers of commerce, trade associations, and similar community organizations.

**132. Financial Institutions (3)**

Prerequisite: Econ 1A-B, Acct 1A-B. Theory of financial system and 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. Characteristics of stocks, bonds, and mortgages; fundamental analysis; investment safeguards and policies; channels for funds.

**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 118A (may be taken concurrently). Fundamental principles of insurance; descriptive, nontechnical study of property and casualty insurance and insurance carriers.

**144. Life Insurance (3)**

Prerequisite: Bus Ad 8 or 118A (may be taken concurrently). Nature and use, scientific basis, types and forms of life insurance; organization, management; public regulation and control.

**151. Personnel Management (3)**

Prerequisite: Bus Ad 110. Primarily for juniors. Human relations in industry; case studies of labor-management relationship; methods of recruitment, selection, training; wage-payment plans; employee services, labor laws and application; collective bargaining methods and policies.

**152. Labor Relations and Collective Bargaining (3)**

Prerequisite: Bus Ad 151 or Econ 150. Relations between employers and organized employee groups; organization, election, and certification procedures; techniques of collective bargaining; basic clauses in labor contracts and their economic significance; administration of the written agreement; mediation and arbitration of disputes; determinants of labor-management conflict and peace.

**153. 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; practice in group leadership; sensitivity training.

**154. Wage and Salary Administration (3)**

Prerequisite: Bus Ad 151. Interaction of economic forces and institutional factors in wage determination; techniques of establishing wage programs; theory and pro-

cedures of job evaluation; establishment of job classifications and pay structures; wage determination under collective bargaining; incentive wage plans; special problems in wage and salary administration.

**156. Labor Law (3)**

Prerequisite: Econ 1A-B; Bus Ad 118A-B, 151. Recommended: Bus Ad 152, Econ 150. State and federal labor statutes, workmen's compensation, social security; procedures and methods in handling labor problems; leading decisions of courts and other bodies in settling labor-management disputes.

**159. Field Work in Labor Relations (2; max total 4)**

Prerequisite: Bus Ad 152. Consultations with labor and management representatives; observation of union meetings, grievance hearings, National Labor Relations Board proceedings, and contract negotiations; participation in planning and publicizing educational conferences. Group meetings and individual conferences.

**161. Principles of Operations Research (3)**

Prerequisite: Bus Ad 102. Quantitative methods in solving business problems; applications by various industries in fields of linear programming, queuing problems, inventory control problems, cost-value models, and problem simulation.

**162. Advanced Computer Programming (3)**

Prerequisite: Bus Ad 62 or former 160, Engr 70, or familiarity with programming. Applications of computer to accounting, inventory, and network systems; linear programming and simulation problems. (3 lecture, 2 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.

**169. Practicum in Computer Programming (1-3; max total 3)**

Prerequisite: Bus Ad 61 or 62 or 162 or Engr 70 or familiarity with IBM 1620 programming. Developing design and test models suitable for computer programming, with emphasis on accounting systems and simulation problems.

**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.

**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 118A-B 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.

**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.

**106. Marketing Problems (3)**

Prerequisite: Mkt 100; 108 or 130 (may be taken concurrently). 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.

**108. Marketing Research (3)**

Prerequisite: Econ 1A-B; Mkt 100; Bus Ad 102 (may be taken concurrently). Fundamentals of market and marketing analysis, research procedure, methods of analysis, applications of statistical techniques to market analysis, and presentation of results.

**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. Marketing systems used to serve business, government, and institutions; industrial procurement practices.

**130. Retailing Management (3)**

Prerequisite: Mkt 100. Not open to students with credit in Mkt 132 or 134. 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.

**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.

**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 Off Ad 2. (5 lab hours)

**\* 2. Intermediate Typing (1)**

Prerequisite: Off Ad 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: Off Ad 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 calculators. (6 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; improvement of office efficiency; office planning and layout; equipment and supplies.

**105. Business Communication (3)**

Prerequisite: Engl 1 or 3 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 in alphabetic, geographic, numeric, and subject filing.

**† 112. Advanced Shorthand (3)**

Prerequisite: Off Ad 23 or one year high school Gregg or equivalent. Review of theory and development of proficiency in writing and transcribing shorthand notes; speed and endurance in writing and transcribing shorthand notes.

**114. Transcription (3)**

Prerequisite: Off Ad 112 or equivalent (may be taken concurrently). Transcription from shorthand and machine dictation; development of production standards for office transcription.

**121. Office Services and Procedures (3)**

Prerequisite: Off Ad 114 or equivalent. Duties and responsibilities of executive secretarial positions. (3 lecture, 3 lab hours)

\* 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.

**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)*

**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 102. Statistical analyses 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 118A-B or 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, 121G or concurrently, or equivalent. Critical comparison of historical and newer techniques in production planning, scheduling, inspection, control; impact of electronic data processing on inventory, quality control, method, layout and work measurement, assembly line balancing.

**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 of the acquisition and utilization of human resources in organizations; staffing; compensation and motivation; communications; employee evaluation; labor relations.

*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 graduate work. Theory and developments in accounting, administration and organization, business education, consumer economics, finance, industrial and regional studies, international business, law, management, marketing, personnel and industrial relations, quantitative studies, real estate and urban economics, 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 recent 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 and Industrial Relations (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 Management-Union Relations (3)**

Prerequisite: Bus 150G or equivalent. Background and process of collective bargaining; strategy techniques in contract negotiations; analysis of provisions of labor contracts; problems of contract administration; arbitration procedures; pathways to peace in management-union relations; practice in negotiating a labor contract. 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 261, Acct 162, or equivalent. Seminar in principles of business system design, installation, and evaluation.

**270. Seminar in International Business (3)**

The economic, social, and political environment of the multinational enterprise; policies, practices, and problems of the firm in the international setting.

**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)****389. Workshop in Business Education (1-6; max total 6)****398. Business Internship (1-6; max total 6)**



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# SCHOOL OF EDUCATION

Richard K. Sparks, Dean

*Department*

*Chairman*

Elementary Education.....	Glenn F. Leslie
Laboratory School.....	David Haimbach
Secondary Education.....	Edwin J. Swineford
Advanced Studies.....	Orley W. Wilcox
Coordinator, Graduate Programs.....	Peter G. Fast
Coordinator, Teacher Education (Secondary) .....	Stephen V. Ballou
(Elementary) .....	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.

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

### **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

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 non-academic 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 non-academic 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 that in general agriculture. To determine whether a proposed 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 specialization must present a minimum grade point average of 2.25 in the total college program. Candidates for credentials with secondary specialization must present a minimum grade point average of 2.50 in the total college program. A grade point average of at least 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 pass a special medical examination by the staff of the college Student Health Service. Each candidate must make an appointment with the college physician and have this examination completed before admission to a credential program is approved.
5. **Language Usage.** Habitual use of clear, correct, and appropriate language, both 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.

Additional requirements must be met by students seeking admission to the professional master's degree programs. For further information regarding these requirements, 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: Leslie (Chairman), Haimbach, Rippey, Sloan  
Associate Professors: Avery, Bakkegard, Dandoy, Fast, Henfling, Hodgens, Lambert,  
J. E. Martin, T. Rea, C. Smith, Wilkin  
Assistant Professors: Lundberg, Randolph, Reitman, Simpson, Stull  
Part-time: Ham, Lemons, T. Robinson, Rosander, Schlobohm, Wienke

**Laboratory School**

Principal: Haimbach

Teachers (grades): Bakkegard (Music), Bowers (K-1), Cady (4), Dow (2-3), Durando (2-3), Gerard (K-1), Gouveia (2-3), Ingham (4), Meeker (6), Silvani (5)

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 can be met by fulfilling the general education requirements for the baccalaureate degree with the following inclusions and additions:

1. A year of English, in addition to competency in composition, is required. Competency in composition is demonstrated by a grade of "C" or better in English 1 or its equivalent. The recommended sequence to meet the English requirement is English 1, 20, 134. Deviations from this sequence should have the approval of the Chairman of the Elementary Education Department. (See *Degrees and Credentials—General Education Requirements*)

2. A course of at least three units in the arithmetic and algebra of the real number system is required. This requirement may be satisfied by (a) Mathematics 140, (b) a similar course with a prerequisite of high school algebra and geometry, or (c) a college level course in calculus. (See *Degrees and Credentials—General Education Requirements*)

### 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*)

### 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 21-22 units in the following courses:

	<i>Units</i>
E Ed 105, 107A-B, 132A-B .....	19
Select one course from: E Ed 100, S Ed 184, 186, 187.....	2-3
	<hr/> 21-22

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.

**BACHELOR OF EDUCATION DEGREE**

Students enrolled prior to July 1, 1964, in a program leading to the bachelor of education degree will be allowed to continue the program provided they hold a regular California provisional kindergarten-primary or provisional general elementary credential (see department chairman).

**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)****100. School and Society (3) (Former S Ed 100)**

Prerequisite: Soc 1 or Anthro 2, or permission of instructor; admission to credential program. Function of education in American culture; role of the school and the teacher; impact of social conflict on the school's function; relationship between school and community; designated field experiences.

**105. Development and Learning (3) (Former A Ed 105)**

Prerequisite: admission to credential program. Facts, ideas, and principles fundamental to an understanding of educational procedures in teaching and learning, and to the growth and development of children.

**107A. Curriculum and Instructional Materials and Procedures (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; effective teaching procedures.

**107B. Curriculum and Instructional Methods and Procedures (4)**

Prerequisite: E Ed 107A, admission to credential program. Current conceptions of history, geography, civics and the sciences; their roles in the elementary curriculum; effective teaching procedures, including audio-visual techniques.

**110. General Methods of Teaching (2) (See S Ed 110)****111. Social Studies in the Elementary School (3)**

Prerequisite: E Ed 105, admission to credential program. Teaching the social studies; points of view, materials, unit planning, and procedures; contributions of other subjects to an adequate social studies program.

**112. Reading in the Elementary School (3)**

Prerequisite: E Ed 105, admission to credential program. Concept of reading as a process; foundations of reading instruction; methods, materials, and instructional aids for teaching reading in the elementary school.

**113. Language in the Elementary School (2)**

Prerequisite: E Ed 105, admission to credential program. Objectives, curriculum, materials, and procedures in language, spelling, and handwriting.

**114. Children's Literature (3)**

Prerequisite: E Ed 105. Standards of selection for prose and poetry suitable for children from kindergarten through grade six; methods and practice in storytelling.

**117. Teaching Modern Mathematics in Elementary Schools (2)**

Prerequisite: admission to credential program. Points of view, curriculum, instructional materials and procedures in teaching modern mathematics in elementary school.

**120. Problems in Elementary Education (1-3; max see below)**

May be repeated with different topics. Prerequisite: E Ed 131, 132A (or concurrent); permission of instructor. Problems of classroom organization and management, culturally disadvantaged, developing curriculum materials, early childhood education, language arts, non-English speaking children, nursery school, reading, social studies, test construction.

**121. Childhood Education (3)**

Prerequisite: E Ed 105. Development of young children; methods of teaching in kindergarten and primary grades; unification of nursery school, kindergarten, and primary grades.

**122. Outdoor Education (2)**

Prerequisite: E Ed 105 or S Ed 152, Biol 157. Philosophy of outdoor education; operation of school programs in outdoor education, school camping, and conservation education. At least one weekend at an outdoor school site.

**122F. Field Work in Outdoor Education (1-2; max total 2)**

Prerequisite: E Ed 105 or S Ed 152, Biol 157; 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 and may not substitute for E Ed 131. For teachers in service, primarily provisionally credentialed teachers. Directed observation to accompany theory classes.

**131. Observation and Participation (1-4)**

Prerequisite: admission to credential program. Directed exercises in observation and participation to prepare for teaching, develop traits and qualities which make for success in teaching, and provide basic experiences for interpreting theories developed in parallel education courses.

**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. Weekly conference with college supervisor.

**133. Curriculum of the Elementary School (2)**

Does not duplicate and may not substitute for E Ed 250. Primarily for in-service teachers. Principles, backgrounds, and organization of curriculums; scope, grade placement, selection, and teaching of subject matter.

**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.

**157. Conservation of Natural Resources (3) (See Biol 157)****158. Speech for the Classroom Teacher (3) (See Spch 158)****167. Teaching Internship (3-12)**

Prerequisite: Baccalaureate degree, approval of departmental admissions and internship committees, E Ed 132A, 168 (concurrent). One-half day teaching under contract for one school year under supervision of assigned college and district personnel.

**168. Seminar for Interns (2-4; max total 4)**

Prerequisite: E Ed 167 (concurrent). Curricular and instructional problems and procedures in elementary schools, with emphasis on internship assignment.

**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 133 or S Ed 156; E Ed 105, teaching experience. Methods of evaluating and improving curriculum on problems identified by the participants; problems may be systemwide or involve only one subject in one school.

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

(See *Regulations and Procedures—Independent Study.*)

**GRADUATE COURSES**

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

**212. Diagnosis and Correction of Reading Disabilities (3)**

Prerequisite: E Ed 112 and graduate standing; Psych 111 recommended. Causes of reading disabilities; observation and interview procedures; diagnostic instruments; standard and informal tests; materials and methods of instruction.

**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 (2) (See A Ed 220)****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.

**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 (4)**

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 (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.*

**353. Curriculum Problems and Practices (1-3; max total 12 if no topic repeated)****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, L. Roth

Associate Professor: Swineford (Chairman)

Assistant Professor: Hasson

Lecturer: Schroer

Part-time: Santigian, Solt

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: Selkirk

Art: Kusel

Biology: D. Falk

Business: H. Rohrer

Chemistry: Vavoulis

English, Karr

Foreign Language: Poythress

Geography: A. Johnson

Health Science: Fricker

Home Economics: M. Rohrer

Industrial Arts and Technology:

Bliss

*Department*

Journalism: Duke

Mathematics: Alkire

Music: Bakkegard

Physical Education—Men: H. Beatty

Physical Education—Women: Hupp-  
rich

Physics: Shockley

Psychology: Lindquist

Social Science: Sawyers

Speech: Stephens

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

Fresno City Unified Schools

Reedley Joint Union High School

State Center Junior College

Tulare Union High School

Visalia Union High School

## 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 a course in composition, must be completed. Service courses of a remedial nature will not 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   |  |
| c. Humanities        | e. Fine Arts   |

#### 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
S Ed 166 (in major and in minor, if required).....	6

17

*Recommended Electives:* S Ed 135, 164, A Ed 154, 174, 284.

*Equivalent Departmental Methods Courses:* Ag 186, Art 104, Bus 281, H Ec 140, IA 192, Jour 131, PE 161.

#### 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 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                |
| <del>e. Health Science</del> | 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 (S Ed)

##### 110. General Methods of Teaching (2) (Same as E Ed 110)

**Prerequisite:** S Ed 152, or equivalent. Basic principles of teaching and application to the classroom; implications of methods for classroom management, motivation, pupil behavior, and reporting to parents; preparation of instructional plans and evaluation instruments.

**135. Audio-Visual Education (2) (See E Ed 135)****151. Cultural Foundations of Education (3)**

Prerequisite: Soc 1, Anthro 2, or permission of instructor; admission to credential program. Education in the United States, philosophical influences, socio-economic factors, educational developments and trends; professional bases of teaching; scope, function, and desirable outcome of public education; current educational issues.

**152. Psychological Foundations of Education (3)**

Not open to students with credit in A Ed 105. 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.

**156. Secondary Education (2)**

Prerequisite: S Ed 152 or permission of instructor. Development of secondary education in America; objectives, administrative characteristics, curricular and extracurricular features, articulation with other school divisions, types of students served, methods of instruction, guidance, community relationships.

**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.

**164. 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 (1-9)**

Prerequisite: one semester residence; bachelor's degree; completion of major and minor 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 163, 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.

**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.

**187. Philosophy of Education (2) (Former A 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.

**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 (2) (See A Ed 220)****251. Secondary School Reading (2)**

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 (2)**

The junior college movement in America, with emphasis upon California; role of junior colleges; characteristics of junior college students and programs; problems of general and terminal education.

**275. Workshop in Curriculum Development (1-6; max total 6) (See E Ed 275)****280. 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.

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

(See *Regulations and Procedures—Independent Study.*)

**298. Seminar in Secondary Teaching (4)**

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.

**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.*

**362. Adult Education (2; max total 4)****363. Curriculum Problems and Practices (1-3; max total 6, if no topic repeated)****393F. Field Work in Curricula (1-3; max total 6, if no project repeated)****395. Supervision of Student Teachers (2; max total 4) (Same as E Ed 395)**

### ADVANCED STUDIES DEPARTMENT

Professors: Wilcox (Chairman and Administration-Supervision Coordinator), R. Evans, R. H. Harrison, Kremen (Pupil Personnel Services Coordinator), Wardle  
 Associate Professors: Griffiths, Mach (Special Education Coordinator)  
 Assistant Professors: G. Johnson, Poole  
 Part-time: Chapman, G. Graves, Hiatt, LeCount, Perrott, Snyder

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 requirements 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
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, E Ed 250 or S Ed 253
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: E Ed 250 or S Ed 253
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: Child Welfare and Attendance; Pupil Counseling and Psychometry and Psychology. 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, depending upon the specialty the student wishes to have designated on his credential.

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 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 and/or three years of full-time teaching experience.

### 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 and speech and hearing handicaps. Students wishing to make the substitution should consult the Coordinator of Special Education not later than the second semester of the sophomore year. Students electing to substitute specialized preparation for a minor must select a major in an academic subject matter area.

**AREA OF MENTALLY RETARDED**

The course work for specialized preparation in the area of the mentally retarded includes the following 22-24 semester units and 4 units in student teaching:

	<i>Units</i>
Psych 167, 168 .....	6
A Ed 160, 161, 162 .....	9
Sp Corr 150, Art 120T (approved section) .....	6
Elect from: A Ed 115F, Sp Corr 151, 152 .....	1-3
A Ed 163A .....	22-24
	4
	26-28

**AREA OF SPEECH AND HEARING HANDICAPPED**

The course work for specialized preparation in the area of speech and hearing handicapped includes the following 39 units and 10 units in clinical practice and student teaching:

X Psych 168, A Ed 160 .....	6
Sp Corr 150, 151, 152, 153, 154, 156, 157, 162, 163, 164 .....	30
Approved electives .....	3
	39
Professional Requirements: Sp Corr 255 (4 un), A Ed 164 (4 un), elect (2 un) .....	10
	49

(Recommended: Psychology minor for speech correction and audiology)

For additional information consult the speech correction adviser in the *Speech Arts Department*.

**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.

For specific requirements for the master of arts degree 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. 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, 285, 286, 287*

*Counseling and Guidance: A Ed 172, 174, 175, 176, 177, 179, 218, 224, 224F, 225, 226, 255*

*School Administration and Supervision: A Ed 261, 262, 263, 264, 266, 267, 268, 269, 270, 271, 275*

*Special Education: A Ed 115F, 160, 161, 162, 163A, 163B, 164, 165, 167, 240, 241, 242, 243*

*All areas: A Ed 190, 200, 290, 298, 299*

#### **112. School Public Relations (2) (See Jour 112)**

#### **X 115F. Field Work With Exceptional Children (1; max total 3)**

Prerequisite: Psych 168. Direct work with exceptional children; supervised experiences in guidance and counseling of exceptional children in special classes and in community facilities.

#### **143. Radio and Television in Education (2) (See R-TV 143)**

#### **143L. Radio and Television Education Laboratory (1) (See R-TV 143L)**

#### **150. Introduction to Speech Correction (3) (See Sp Corr 150)**

#### **151. Principles of Aural Rehabilitation (3) (See Sp Corr 163)**

#### **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.

#### **X 160. Education and Guidance of Exceptional Children (3)**

Prerequisite: Psych 168. Historical development, status and trends in education, and legal provisions for atypical children; guidance of the handicapped. (2 lecture, 2 supervised field hours)

#### **X 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)**

X 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 (1-4)  
(Former A Ed 163)**

X Prerequisite: completion of student teaching requirement for a standard teaching credential; one semester residence; admission to the credential program. Directed observation, participation and teaching in classes for the mentally retarded in public schools under supervision. Weekly conference with college supervisor.

**163B. Student Teaching, Exceptional Children: Educationally Handicapped (1-4)  
(Former A Ed 163)**

X Prerequisite: completion of student teaching requirement for standard credential; one semester residence; admission to credential program. Directed observation, participation and teaching in classes for the educationally handicapped in public schools under supervision. Weekly conference with college supervisor.

**164. Student Teaching: Speech Correction and Lip Reading (1-4)**

X Prerequisite: 4 units of Sp Corr 155; completion of student teaching requirement for a basic teaching credential; one semester residence; admission to the credential program. Directed observation, participation, and teaching in classes for speech correction and lip reading in public schools under supervision. Weekly conference with college supervisor.

**165. Methods in Special Education (1-4; max total 4)**

X 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.

**167. Education of the Emotionally Disturbed (2)**

X 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.

**172. Laws Relating to Children (2)**

X May not substitute for A Ed 264. The *Education Code*, *Labor Code*, and *Welfare Code* of the State of California; federal legislation applicable to children.

**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.

**175. Occupational Analysis and Information (2)**

X Prerequisite: A Ed 174. Theories of occupational choice and their importance for counseling; sources of guidance information; community surveys; job analysis; follow-up studies, work experience programs; placement programs.

**176. Child Welfare, Parent Education, and Counseling (2)**

X Techniques, procedures, and materials for teacher use in facilitating effective home-school relationships.

**177. Testing in Counseling (3)**

Prerequisite: A Ed 153, 175. Administration and interpretation of commonly used tests in counseling; preparation of case reports.

**179. Group Process in Pupil Personnel Services (3)**

Prerequisite: A Ed 174, 175. Group process theory and procedures in pupil personnel services; use of groups in the school guidance program. Meets requirement of the designated services credential.

**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)**

X 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 lecture, 2 field hours arranged)

**220. Research in Education (2) (Same as E Ed-S Ed-PE 220)**

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.

**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 175, 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 175, 224. Organization, administration, and evaluation of guidance services.

**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)

**242. Education and Guidance of the Gifted and Creative (3)**

Prerequisite: E Ed 105 or equivalent; teaching experience. Nature and needs of the gifted and creative; program planning; field work. (2 lecture hours; 2 field-study hours arranged)

**243. Seminar in the Education of the Neurologically Handicapped Child (3)**

Prerequisite: teaching experience. Characteristics of the neurologically handicapped child; methods of instruction; administrative and guidance problems; case studies.

**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.

**255. Individual Mental Testing (3) (See Psych 265)****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. 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. 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. 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. School-Community Relations and School Housing (2)**

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. 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. 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. 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. 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. Advanced Problems in Education (3)**

Prerequisite: possession of a regular teaching credential or permission of instructor. Problems of teaching and administration of the public school; recent reports of national professional groups; newly developed research; significant movements in education.

**284. International Education (3)**

Analysis of historical, social and political forces which shape national education endeavor. Emerging international education efforts and organizations.

**285. 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. Advanced Educational Sociology (3)**

Prerequisite: A 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. History of Educational Thought (3)**

Prerequisite: A Ed 187; 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. Seminar in Advanced Studies (4)**

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, weekly group discussions, weekly individual conferences, and hours arranged.

**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.



## SCHOOL OF ENGINEERING

Engineering ..... 280

Agricultural  
Civil  
Electrical and Electronics  
Industrial  
Mechanical

# SCHOOL OF ENGINEERING

Thomas H. Evans, Dean

Professors: T. Evans, Barnhart, Cehrs, Foin, Kuhlan, J. H. Smith

Associate Professors: Bevill, Deming, Gaylord, Higgins, Jarrett, Richards, Rowland

Assistant Professors: Dominick, Liao

Part-time: Greulich, Kevorkian, Ostrander

The School of Engineering provides instruction in the fields of agricultural, civil, electrical and 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.

Some 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 and electronics, industrial, and mechanical engineering. Students are prepared for professional engineering and graduate study. A substantial amount of science and mathematics is required in the undergraduate program in order that the student may gain the understanding necessary to the professional engineer 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

Minimum 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 minimum 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 deviation 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 and 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 makes use of various electronic devices in the process. Electronics engineering involves electrical communications, including electron devices for transmission and reception 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 by means of 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 and 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; 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.

#### CREDENTIAL PROGRAM

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

#### BACHELOR OF SCIENCE DEGREE IN ENGINEERING

The bachelor of science degree in engineering is granted upon completion of 136 units in all engineering majors except mechanical engineering which requires 128 units. The general degree requirements and general education requirements must be met. See requirements listed below and under *Degrees and Credentials*. General education requirements throughout the program may be taken in any order approved by the adviser. The sequences listed below require 17 units per semester (16 in mechanical engineering). A major in one of the fields of engineering consists of all engineering courses, including approved electives, listed below in the program for the first two years required of all engineering students, and in one of the specific fields of concentration. The major in agricultural engineering includes, also, listed courses in agriculture; and the industrial engineering major includes listed courses in business and economics.

#### First and Second Year Programs Required of All Engineering Majors

- 1st Year: 1st Semester: Engr 26, Math 75, Chem 1A, PE or AFROTC, Arts (except HSc 91 for ME)  
 2nd Semester: Math 76, Chem 8, Physics 4A, English 1, HSc 91 (except ME), PE or AFROTC
- 2nd Year: 3rd Semester: Math 77, Physics 4B, Speech, Hist 11 or 12, Engr 30, 70 (except ME), PE or AFROTC  
 4th Semester: Math 81, Physics 4C, Pol Sc 11, Arts (0-1 un), PE or AFROTC, Engr 32; for CE and AgE (Engr 1, 1L), for ME and IE (Engr 11, 11L), for EE (Engr 150, 150L)

**Third and Fourth Year Programs for Specific Majors****Agricultural Engineering (AgE)**

- 3rd Year: 5th Semester: Engr 130, 131, 131L, 164, 164L, Ag 136, AH 1  
 6th Semester: Engr 11, 11L, 121, 165, 165L, AgM 115, Bot 1
- 4th Year: 7th Semester: Psych 10, Engr 150, 150L; social science; approved electives; elective  
 8th Semester: Engr 151, 151L, 170, AgM 81, 159, literature or philosophy; approved elective  
 (Approved electives: Ag 146, 184, AgM 116, 151A-B, 158, Geology, Engr 141)

**Civil Engineering (CE)**

- 3rd Year: 5th Semester: Engr 2, 2L, 130, 131, 131L, 164, 164L, Psych 10  
 6th Semester: Engr 135, 137, 165, 165L, literature or philosophy; approved electives
- 4th Year: 7th Semester: Engr 134, 143, 150, 150L, 170; social science; approved electives  
 8th Semester: Engr 133, 151, 151L or 156, 156L; 172; biological science; approved electives  
 (Approved electives: Engr 101, 102, 103, 104, 138, 139, 140, 141, 142, 144, 145, 146, 149, 171, 173, geology. Recommended groups: (structures and soil mechanics) Engr 139, 144, 146; (surveying and highways) Engr 101, 102, 103, 104, 138, 140; (water resources) Engr 140, 141, 142, 145, 149)

**Electrical and Electronics Engineering (EE)**

- 3rd Year: 5th Semester: Engr 130, 131, 152, 152L, 155, 156, 156L  
 6th Semester: Engr 131L, 151, 151L, 153, 153L, 157, 157L, 164, 164L
- 4th Year: 7th Semester: Engr 155L, 165, 165L, biological science, literature or philosophy; approved elective; elective  
 8th Semester: Engr 170, 172, Psych 10, history, arts; approved elective  
 (Approved electives: Engr 158, 158L, 171, 173, 180, 180L, 181, 181L)

**Industrial Engineering (IE)**

- 3rd Year: 5th Semester: Engr 130, 131, 131L, 164, 164L, Bus Ad 124, Econ 1A  
 6th Semester: Engr 110, 121, 150, 150L, 165, 165L, Econ 1B
- 4th Year: 7th Semester: Engr 111, 151, 151L, 170, Acct 1A, Psych 10; approved elective  
 8th Semester: Engr 156, 156L, 172, biological science, literature or philosophy, social science; approved elective  
 (Approved electives: Acct 1B, Bus Ad 151, 161, Engr 122, 139, 171, 173, Math 51 or 131)

**Mechanical Engineering (ME)**

- 3rd Year: 5th Semester: Engr 70, 130, 131, 164, 164L, Psych 10, Arts  
 6th Semester: Engr 121, 150, 150L, 165, 165L, literature or philosophy
- 4th Year: 7th Semester: Engr 122, 131L, 151, 151L, 166, 166L, Arts; approved elective  
 8th Semester: Engr 170, 172, biological science; social science; 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 (1)**

Prerequisite: Math 75, 76. Introduction to digital computer programming. (1 2-hour lecture-lab)

**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.

**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)

**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) (Former Engr 132)**

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 Cooper diagrams; rigid frames analyzed by slope deflection and moment distribution.

**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 131L. 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). 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. Irrigation Engineering (2)**

Prerequisite: Engr 131, 164. Flow of water in canals, design of canals and canal systems, measurements of water, surveys for irrigation systems. (1 lecture, 3 lab hours; field trips)

**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; test for entrained air; slump test; compressive and flexural 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.

**149. Engineering Hydraulics (3)**

Prerequisite: Engr 165. 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 77 (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; Math 81. 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 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.

**155L. Precision Electrical Magnetic Techniques (1)**

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)

**156. Electronics (2)**

Prerequisite: Engr 150, 150L. Electron tube 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)

**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)**

Not open to students with credit in Engr 140, 140L; 160, 160L; 161, 161L; or 163, 163L. 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, Math 81. 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*)

**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

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# SCHOOL OF PROFESSIONAL STUDIES

Horace O. Schorling, Dean

<i>Department</i>	<i>Chairman</i>
Aerospace Studies.....	Major Karl R. Baumwell
Criminology.....	Frank M. Boolsen
Health Science .....	Henry F. Fricker
Home Economics .....	Ratana Newsome
Industrial Arts and Technology.....	Frank E. Schroeter
Journalism.....	Paul V. Sheehan
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. 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 concentration for use on the master of arts degree in education. 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. 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: Baumwell (Chairman)

Assistant Professor: Kinder

**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.

Applications should be submitted to the Professor of Aerospace Studies during 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, 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. Nature of war; 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, equipment, and problems.

##### **104A-B. The Professional Officer (3-3)**

Prerequisite: AS 103A-B. Professionalism, 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), Dienstein, Tocchio  
 Associate Professors: Kallam, Margosian  
 Part-time: Clegg, Flannery, Kilburn, McKinney, Mortland

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, 129, 140 .....	35
Crim 108 (or satisfactory experience) .....	8
Elect from: Crim 120, 132, 153, 170 .....	9
Electives in psychology and sociology (ud) .....	12
	64

*Additional Requirements:* H Sc 48 (or first aid certificate); Jour 17A, Soc 1, completion of A Ed 153 or Psych 25 recommended before graduate work.

#### Corrections Option

Crim 74, 105A, 120, 132, 133, 135, 136, 138, 140, 153, 183 .....	33
Crim 181 (or satisfactory experience) .....	3
S Welf 122, 124, 127 .....	6
Elect from: Psych 147, PAC 24, 26, 121, 126, 127 .....	3
Elect from: A Ed 153, Crim 170, Psych 25 .....	3
Electives in psychology and sociology (ud) .....	12
	60

*Additional Requirements:* Soc 1; completion of A Ed 153 or Psych 25 recommended before graduate work.

### CREDENTIAL PROGRAM

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

### 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.

*Courses***CRIMINOLOGY****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.

**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.

**129. Detection of Deception (3)**

Open only to criminology majors. Prerequisite: Crim 4 or permission of instructor. Historical, physiological, psychological and legal aspects of criminal interrogation; detection of deception techniques; theory and practice of instrumental detection of deception and other interrogation aids; laboratory experiments with polygraph. (2 lecture, 3 lab or demonstration hours)

**132. Criminology (3)**

Prerequisite: 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. Field trips required.

**135. Probation and Parole (3)**

Prerequisite: Crim 120, or 132, or permission of instructor. Principles and practices in probation and parole.

**136T. Topics in Corrections (3; max total 9)**

Prerequisite: senior or graduate standing in corrections. Critical analysis of recent trends in the correctional process; intensive investigation and discussion of selected topics in corrections. Field trips required.

**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) (Same as Psych 153)**

Psychological bases of crime; motivation, alcoholism, economic and cultural pressures; forms of crime; criminal careers.

**170. Research in Criminology (3)**

Not open to students with credit in Crim 200. 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)**

Prerequisite: Crim 138 or permission of instructor. Professional experience in individual and group counseling in a correctional or related agency. (1 lecture, 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*.

**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, Lindly

Associate Professor: Kimberly

Assistant Professor: Liskey

Part-time: Caffee, DeFries, Fryer, Fung, Mortenson, Reich

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 162, 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 ARTS DEGREE**

A special interest area in health science may be incorporated in the master of arts degree in education. 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 see the sections on *Public School Credentials* and the *School of Education*.

**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 recom-

mentation, 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.

### THE STANDARD DESIGNATED SERVICES CREDENTIAL WITH SPECIALIZATION IN HEALTH

This credential authorizes the holder to serve as a school nurse or in other designated health services. For specific information, consult the Nursing Department.

#### *Courses*

#### HEALTH SCIENCE DEPARTMENT

##### **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 (2)**

Meets general education requirements. Significance of basic health problems applicable to the young adult and to society.

##### **91. Health Information (1)**

Meets general education requirements. Not open to students with credit in H Sc 90. A synthesis of scientific knowledge from the contributing disciplines which relate to an understanding of health problems.

##### **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.

##### **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: Merb 54 or 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 Sanitation (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.

**162. Principles of Audiology (3) (See Sp Corr 162)****163. Public Health Administration (3)**

Principles of public health administration; fundamentals of organization and administration in public health.

**165. Directed Group Study in Sanitation (3)**

Prerequisite: H 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 and sex education; family relationships, sociology of family, cultural differences, parent education, classroom methods, materials and techniques. (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)*

**205. Safety Problems and Programs (2)**

Prerequisite: H Sc 105, 285F concurrently. Development, organization, and administration of safety programs; investigation and analysis of pertinent problems.

**210. Administration of the School Health Program (3)**

Prerequisite: H Sc 123. Organization, administration, and legal aspects of the school health program.

**220. Physical Handicaps (2)**

Prerequisite: H Sc 123, 285F concurrently. Cause, treatment, and educational implication of crippling conditions, including cerebral palsy of preschool and school-age children; rehabilitation and adjustment problems.

**223. Advanced School Health Education (2)**

Prerequisite: H Sc 123, 285F concurrently; teaching experience or permission of instructor. Critical analysis and evaluation of the total school health program; curriculum materials, and special techniques relating to instruction, services, and environment.

**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. Community Health Organization (2)**

Prerequisite: H Sc 123, 157, 285F concurrently. Planning educational aspects of community health programs; group procedures; community organization; selection, development, and use of media.

**280. Problems in Health (2)**

Prerequisite: permission of instructor. Problems in health studied through observation of school situations; review of the literature; trends.

**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.

**298. Seminar in Health Education (4)**

Prerequisite: advancement to candidacy for MA degree in education; B average on 24 units of MA program including A Ed 220 and 6 units on Fresno campus. Research in solution of problems in health education. Individual research papers required; weekly group discussions, weekly individual conferences; and hours arranged.

**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. Selected Topics in Health (1-3)**

## HOME ECONOMICS DEPARTMENT

Professors: Porch, Smardan

Associate Professors: Newsome (Chairman), M. Rohrer, Rose

Assistant Professors: Harkins, Hendrickson, Karikka, Kissick, Sollie, V. Taylor, J. Wolfe

Part-time: Blanton, B. Cehrs, M. Glim, M. Swineford,\* Yeary

The Home Economics Department offers a major and a minor in home economics for the bachelor of arts degree and a program leading to the master of science degree. Programs may be planned to provide preparation for teaching careers in preschool, elementary, and secondary schools. Professional careers also include dietetics, nutrition, and related areas. In addition to preparing students for a career, all curricula are planned to develop background knowledge, appreciation, and skills useful in 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, at least 3 units in each of the areas listed below	15
Home economics electives from the areas listed below .....	9
<i>Child Development and Family Relations: H Ec 131, 139</i>	
<i>Clothing and Textiles: H Ec 100, 102, 103</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>	
	—
	48

*Additional Requirements:* Chem 2A-B, Biol 2A, Soc 1 or Anthro 2 or Hist 1, approved section of Art 20T.

## HOME ECONOMICS MINOR

Requirements listed below may be varied with permission to meet individual needs and interests depending on students' majors.

<b>General Minor</b>	<i>Units</i>
H Ec 10, 12, 14 or 24, 38, 39, 40 .....	15
H Ec 101 or 132, 131 .....	5-6
Home economics electives .....	4-6
	—
	24-27

## 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*.

*Courses*

## HOME ECONOMICS

**1. Dynamics of Family Relations (2)**

Personal and social development of the individual through stages of family cycle, dynamics of family interaction, socio-economic and cultural influence.

\* Deceased.

**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. (2 lecture, 4 lab hours)

**10. Basic Food Study (3)**

Open only to home economics majors and minors. Introduction to food preparation, standards determining quality of food, family meal planning. (2 lecture-discussion, 4 lab-demonstration hours)

**11. Beginning Textiles (3)**

Classification of fibers, production of natural fibers; fabric production, mechanical finishes; characteristics, use, and care of fabrics.

**12. Fashion Analysis (1)**

Fashion trends in dress in contemporary and historic cultures; personal adaptation of clothing needs.

**14. Beginning Clothing (2) (Former H Ec 12A)**

Prerequisite: H Ec 12 (or concurrently). Clothing and pattern selection, figure and fabric analysis; theories influencing skills and techniques; use of commercial patterns.

**24. Clothing (2) (Former H Ec 12B)**

Prerequisite: H Ec 12 or concurrently; H Ec 14 or pretest in clothing construction. Individualization of basic and designer patterns; alteration principles; techniques of handling new fabrics.

**31. Dietetics (2)**

Elements of nutrition and diet in disease. (1 lecture, 3 lab hours)

**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)**

Psychological and motor development of the child through adolescence.

**40. Elementary Nutrition (3)**

Principles of nutrition; requirements at different stages of growth and development. (2 lecture, 2 lecture-lab hours)

**41. Family Meal Management (3)**

Not open to students with credit in H Ec 10. Open to men. Planning and preparation of family meals based on economic, nutritional, psychological, sociological, and aesthetic principles; meals for beginning families and apartment dwelling college students. (2 lecture-discussion, 4 lab-demonstration hours)

**42. Management for Effective Living (2)**

Separate sections for men and women; not open to home economics majors. 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 (3)**

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

**51. Home Management (2) (Former H Ec 110)**

Management principles related to 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 suit or coat; draping, use of individual dress form.

**101. Consumer Economics (2)**

Consumer spending related to the family cycle; social and psychological factors influencing consumer behavior.

**102. Advanced Clothing (3) (Former H Ec 12B)**

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.

**103. Advanced Textiles (3)**

Prerequisite: H Ec 11, Chem 2A-B, Chem 8 recommended. Production and variations in man-made fibers; chemical finishes; dyes and dyeing; physical testing of fabrics. (2 lecture, 2 lab hours)

**105. Food Science (4)**

Prerequisite: H Ec 10, Chem 2A-B. Application of chemistry, physics, and bacteriology to the study of foods. (2 lecture, 6 lab hours)

**111. Home Management Laboratory (3)**

Prerequisite: H Ec 40, 50, 105 (or concurrently). Integrated experience in various phases of home economics provided by residence in home management house.

**122T. Topics in Clothing and Textiles (1-3; max total 12 if no topic repeated)**

Prerequisite: H Ec 11, 12, permission of instructor. Topics may include: social influences on costumes; fashion trends and developments; advanced flat-pattern and draping; fashion merchandising; recent trends in textiles; textile geometry.

**130. Experimental Food Study (2)**

Prerequisite: H Ec 105. Structure and composition of foods, their behavior during processing; food research; food demonstration techniques. (2 lecture, 2 lab hours)

**131. Family Relationships (3)**

May be applied on group 7 of the general education requirement. 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 2A. Metabolism of carbohydrates, fats, and proteins; vitamins and minerals. (2 lecture, 2 lecture-lab hours)

**138. Nutrition in Disease (2)**

Prerequisite: H Ec 137 or permission of instructor. Metabolism in disease and therapeutic diets. (2 2-hour lecture-labs)

**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)**

Homemaking education in secondary schools; factors in teaching competence; observation in public schools. (2 lecture, 2 lab hours)

**141. Institution Organization and Management (3)**

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 10, 105, junior standing. Estimation of needed quantities; quantity food preparation and service; use and care of institution food service equipment. (2 lecture, 4 lab hours)

**143. Institution Experience (3)**

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

**144. Marketing, Equipment and Plant Layout (3)**

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

**152T. Topics in Home Management, Equipment, and Family Economics (1-3; max total 12 if no topic repeated)**

Topics may include: community resources for effective home management; contemporary family economics; creative management and human potential; ecology of home management.

**162T. Topics in Child Development and Family Relationships (1-3; max total 12 if no topic repeated)**

Prerequisite: H Ec 39 and/or H Ec 131, Psych 7, Soc 1 or Anthro 2, permission of instructor. Topics may include: interpersonal relationships within the family; family life education; family crises; child study; creative experiences; comparative child-rearing practices.

**172T. Topics in Housing and Home Furnishings (1-3; max total 12 if no topic repeated)**

Prerequisite: H Ec 38 and permission of instructor. Topics may include: contemporary housing and home furnishings, home furnishings practicum, family housing, cross-cultural housing.

**182T. Topics in Food, Nutrition, and Dietetics (1-3; max total 12 if no topic repeated)**

Prerequisite: H Ec 10, 40, and permission of instructor. Topics may include: cultural foods, advanced food technology, recent developments in nutrition and dietetics.

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

See *Regulations and Procedures—Independent Study*.

**GRADUATE COURSES**

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

**200. Research Methods 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.

**280T. Seminar in Food and Nutrition (3; max total 12 if no area repeated)**

Prerequisite: H Ec 200, professional requirements in the field, permission of instructor. Recent developments in food and nutrition research; clinical nutrition; child and/or geriatric nutrition; problems of world food and nutrition.

**281. Seminar in Home Economics (3; max total 12 if no topic repeated)**

Family relations, textiles, clothing, housing, family finance, child development.

**285. Investigation in Food and Nutrition (4)**

Prerequisite: Chem 150A-B, 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.

**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), Bliss, Dunning

Associate Professors: L. Aldrich, Blomgren, Dettinger, Feuches, Gonser, McComas, Newcomb, Rockwell

Assistant Professors: Blanton, Bockman, Gysler, Livingston, L. Smith, Thomsen

Part-time: Cullen, Garcia, Guaglianone, Kady, Kimmons, Mincy, Shirk

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
	<hr/> 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
	<hr/> 20

## Drafting and Design

IA 41, 42, 140, 143, 146, 148 .....	16
Industrial arts electives .....	4
	<hr/> 20

## Electricity and Electronics

IA 52, 70, 152, 153, 156, 158 .....	18
Industrial arts electives .....	2
	<hr/> 20

## General Metal

IA 41, 70, 71, 74, 170, 177 .....	16
Industrial arts electives (incl at least 2 u.d.) .....	4
	<hr/> 20

	<i>Units</i>
<b>Graphic Arts</b>	
IA 60, 161, 162, 163, 164, 166 .....	16
Industrial arts electives .....	4
	20
<b>Industrial Crafts</b>	
IA 70, 80, 133 (4 un), 146, 162, 177, 179 .....	18
Industrial arts electives .....	2
	20
<b>Machine Tool Metal</b>	
IA 41, 70, 71, 74, 170, 174 .....	17
Industrial arts electives .....	3
	20
<b>Woodworking</b>	
IA 41, 80, 82, 184, 186 .....	15
Industrial arts electives .....	5
	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*). In addition to a core program consisting of industrial arts and technology courses and courses in related areas, and the specific requirements in one of the options, each student majoring in industrial technology must also complete Econ 1A-B, Physics 2A-B.

#### Industrial Technology Major

	<i>Units</i>
<b>Required Core Program</b>	
IA 41, 52, 70, 101, 103, 146, 166, 199 .....	23
Acct 1A, Bus Ad 151, 62, Math 71, 72 .....	15
	38
<b>Automotive Industries Option</b>	
IA 12, 71, 74, 120, 122, 124, 129 .....	20
Electives in related areas approved by department .....	23
	43
<b>Drafting Industries Option</b>	
IA 42, 44, 71, 74, 140, 143, 144, 145 .....	23
Art 20T (approved section), Engr 1, 1L, Geog 115 .....	9
Electives in related areas approved by department .....	11
	43
<b>Electrical Industries Option</b>	
IA 71, 74, 152, 153, 154, 156, 158 .....	20
Electives in related areas approved by department .....	23
	43

	<i>Units</i>
<b>Graphic Arts Industries Option</b>	
IA 60, 71, 74, 161, 162, 163, 164, 196 .....	20
Art 20T (approved section), Mkt 140, 142 .....	9
Electives in related areas approved by department .....	14
	43
<b>Metal Industries Option</b>	
IA 71, 74, 170, 171, 173, 174, 175, 176 .....	22
Electives in related areas approved by department .....	21
	43
<b>Wood Industries Option</b>	
<i>Wood Technology Emphasis</i>	
IA 80, 82, 182, 184, 186 .....	15
Chem 2A-B, 8 .....	9
Electives in related areas approved by department .....	19
	43
<i>Building Construction Emphasis</i>	
IA 80, 82, 181, 182, 186 .....	15
AgM 91 .....	2
Electives in related areas approved by department .....	26
	43

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

#### 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.

### *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)

#### **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.

**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 (2)**

Prerequisite: IA 41 or permission of instructor. Selection and use of materials in industrial arts design; organization and experimentation in two- and three-dimensional problems using varied media in industrial arts projects.

**148. Product Design (2)**

Prerequisite: IA 41 or permission of instructor. New scientific developments related to design problems and industrial products; relationship of two- and three-dimensional expression in space, form and function techniques, skills of the craftsman.

**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)

**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)

**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)

**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 non-ferrous 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.

**181. Wood Frame Building Construction (3)**

Principles of wood frame construction including foundations, framing, exterior finish and related areas of layout, estimating and ordering materials; conventional and modular component systems.

**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, upholstering, inlaying and veneering, advanced wood turning, furniture restoration.

**186. Wood Technology (3)**

Prerequisite: IA 82 or permission of instructor. Properties and uses of wood, lumber grading, lumber and wood products manufacturing, wood seasoning and preserving, plywood and laminated wood, glue and glued products, fiber and particle boards.

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

See *Regulations and Procedures—Independent Study*.

**192. Industrial Arts Education in Secondary Schools (3)**

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; sociological, historic, economic, and philosophic implications.

**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.

**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.

**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: Sheehan (Chairman), Duke, Shepard  
 Associate Professor: Margosian  
 Assistant Professors: Molen, Rehart  
 Instructor: Temple

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.

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 and advertising, radio and television news communication, and technical journalism.

#### News-Editorial

	<i>Units</i>
Jour 8A-B, 104, 108, 109, 110A-B, 114, 115, 126, 181 .....	30
Elect from: Jour 1, 2, 17A, 17B, 102, 117, 124, 149, 150 .....	6
	36

*Additional Requirements* (beyond general education requirements): IA 60; 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 Public Relations and Advertising

Jour 8A-B, 110A or B, 113, 114, 145A-B, 146A-B, 147, 149, 173 .....	32
Elect from: Jour 1, 2, 17A, 17B, 106, 117, 150, 181 .....	4
	36

*Additional Requirements* (beyond general education requirements): IA 60; marketing (6 units), sociology and psychology (6 units), approved subject field (6 units).

#### Journalism with Emphasis on Radio and Television News Communication

Jour 8A-B, 17A, 108, 109, 110A-B, 114, 115, 128, 181 .....	29
Elect from: Jour 1, 2, 17B, 117, 126, 149, 150 .....	7
	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>	<i>Units</i>
Jour 8A-B, 106, 109, 110A-B, 114, 115, 124, 126 .....	27
IA 60 .....	3
Journalism electives (ud) .....	4
Electives in related areas approved by department .....	15
	49

**MINOR**

<b>News-Editorial</b>	
Jour 8A-B, 109, 110A or B, 114, 115 .....	14
Journalism elective (3 ud) .....	6
	20

<b>Journalism with Emphasis on Public Relations and Advertising</b>	
Jour 8A-B, 110A or B, 113, 145A, 146A .....	16
Journalism elective (ud) .....	4
	20

<b>Journalism with Emphasis on Radio and Television News Communication</b>	
Jour 8A-B, 108, 128 .....	12
Journalism electives (6 ud) .....	8
	20

*Additional Requirements:* R-TV 40, 41 or 44, 142.

**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*.

*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)

**17A. Introduction to Photography (2)**

Not open to students with credit in Art 101. Still-photography; use of a variety of camera equipment for black-and-white pictures; pictures taken and films and prints processed in laboratory sessions. (1 lecture, 3 lab hours)

**17B. Press Photography (2)**

Prerequisite: Jour 17A or permission of instructor. Use of news cameras for photographic reporting; evaluation of pictures for publication; laboratory experience in use of flash and extension lighting, filters, and high-speed processing methods. (1 lecture, 3 lab hours)

**102. The Press and World Affairs (3)**

The role of the international press in collecting and disseminating national and foreign news.

**104. Journalism in American Society (3)**

Historical backgrounds of American press; development from colonial to modern times; newspapers and allied media as political and social forces.

**106. Industrial Journalism (2)**

Survey and analysis of internal and external publications produced by business and industry.

**108. Reporting of Public Affairs (3)**

Prerequisite: Jour 8A-B or permission of instructor. Methods of reporting the courts and municipal, county, state, and federal governments.

**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. (1 lecture, 9 arranged hours)

**112. School Public Relations (2) (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, 2 hours arranged)

**115. Copyreading (1)**

Prerequisite: Jour 114. Reading copy and writing headlines. College newspaper used as a laboratory. (4 hours arranged)

**117. Advanced Press Photography (2)**

Prerequisite: Jour 17B or permission of instructor. Field and laboratory work in the production of the picture story, magazine and advertising illustrations on assignment; advanced processing methods including use of color materials. (1 lecture, 3 lab hours)

**120. Newspaper Workshop (1)**

Prerequisite: Jour 10A-B. Practice in comprehensive, depth reporting and executive news work; use of college newspaper and Journalism Department newspaper for laboratory purposes. (1 lecture, 3 field 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. (1 lecture, 3 hours arranged)

**142. Radio and Television News Broadcasting (3) (See R-TV 142)****145A-B. Newspaper Advertising Procedures (3-3)**

Newspaper advertising; management of advertising department, production of copy, layouts, and servicing accounts.

**146A-B. Field Work in Newspaper Advertising Procedures (1-1)**

Practice in selling and servicing advertising accounts for newspapers with the college newspaper used as a laboratory. (1 lecture, 3 field hours)

**147. Radio and Television Advertising (3)**

Writing and production of commercial advertising for the broadcast media.

**149. Public Opinion and Propaganda (3)**

Use of propaganda to motivate public opinion on national and international levels in such areas as business, politics, and communities.

**150. Media of Communication (3)**

Motivation of large numbers of people through the control of such mass media as newspapers, magazines, motion pictures, radio and television.

**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.

**181. Laws of Communication (2)**

Libel, right of privacy, right of confidence, contempt by publications, property rights in manuscripts, infringement, copyright, postal laws.

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

See *Regulations and Procedures—Independent Study*.

**198. Newspaper Practice (2-4; max total 4)**

Prerequisite: permission of instructor. Internship on San Joaquin Valley newspapers and radio and television stations. Reports made regularly to instructor.

**199. Newspaper Advertising Practice (2-4; max total 4)**

Prerequisite: Jour 145A-B, 146A-B; permission of instructor. Internship in advertising departments of San Joaquin Valley newspapers. Reports made regularly to instructor.

## NURSING DEPARTMENT

Professor: Gardner (Chairman)

Associate Professors: J. Bergey, M. Davis, Nishio

Assistant Professors: Bailey, Baumgartner, Chang, Erickson, E. Greene, Haddad, Hansen, Hogan, Hymovich, Jenkin, Kay, Krell, Maxson, Monsen, Moranda, M. Nelson, Sia, Sommer, Stittich

Instructor: B. Bergey

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). 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, 63 of which are in the nursing major. The general requirements for the bachelor of science degree must be completed (see *Degrees and Credentials*). Completion of certain lower division nursing courses will meet general education requirements in health education (see chairman of Nursing Department).

	MAJOR	Units
Nurs 1, 16, 26 .....		17
Nurs 111, 112, 114, 116, 120, 125, 126, 130, 135, 145 .....		46
		—
		63

*Additional Requirements:* Mcarb 20, H Ec 31, Psych 111, 119, Chem 2A-B, Biol 66, Physio 1, Soc 1, Biol 2A recommended.

## 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.

**SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE MAJOR IN NURSING**

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-17 units per semester. A total of 130 units must be completed for the bachelor of science degree. (See *Degrees and Credentials*)

1st Year: Nurs 1, Chem 2A-B, Psych 7, Biol 66, Soc 1

2nd Year: Nurs 16, 26, Mcrb 20, H Ec 31, Psych 119, Physio 1

3rd Year: Nurs 111, 112, 114, 120, Psych 111

4th Year: Nurs 116, 125, 126, 130, 135, 145

**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 Nursing Department offers a master of science degree program in nursing. For information consult the department graduate adviser.

*Courses*

**NURSING**

**1. Introduction to Nursing (1)**

Orients students to nursing as a profession. Field trips required. (1 2-hour lecture-lab hour)

**16. Fundamentals of Nursing (8) (Former Nurs 5)**

Prerequisite: Biol 66, Chem 2A-B, Physio 1 (concurrently). 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, 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)

**111. Maternal-Child Nursing I (7)**

Prerequisite: Nurs 26, Psych 119. Principles; teaching health; nursing care during maternity cycle, including neonatal; family unit and healthful family relationships. (3 lecture, 12 lab hours)

**112. Maternal-Child Nursing II (7)**

Prerequisite: Nurs 26, Psych 119. Nursing care of the developing child; family unit; relationship of illness to growth and development. (3 lecture, 12 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 111, 112, 120. 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. 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)**

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 (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. Public 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)

**135. Legal Problems in Nursing Education (2)**

Prerequisite: Nurs 111, 112, 120. The conduct, rights, and responsibilities of a professional nurse; analysis of the legal status, obligations, and liabilities of the nurse.

**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, 126 (concurrently). 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 (2)**

Application of general techniques of research methodology to specific problems in nursing.

**245T. Seminar in Clinical Nursing (3)**

Case study analysis of problems in nursing leading to clinical specialization.

**247. Seminar in Administration (3)**

Case study analysis of problems in nursing service administration, including such concerns as organizational structures, staffing, employee assessment.

**250. Practicum in Clinical Nursing (3)**

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

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Social Welfare .....	329

# SCHOOL OF SOCIAL WORK

Thomas M. Brigham, Dean

Associate Dean.....Barbara K. Varley

Professors: Brigham, Morissey, Varley

Associate Professors: Bonham, Dutton, Emmal, Jenkins, Kapoor, Klass, Moss, Pickford, Rich

Assistant Professors: V. Bates, S. Bennett, Ellis, J. Kaufman, Kershaw, Mori, Ruhl, Van Veldhuizen, Wells

Lecturer: Dunham

Field Instructors: M. F. Anderson (SBCWD), Bardizian (FCDMH), J. Bates (MCWD), Baumann (FCWD), E. Bird (A+SH), Fibel (FCPD), Greenwald (CDC), A. Hogan (CDSW), McKell (CYA), Sundsten (AgSH)

Part-time: Clegg, Levy, Ziering

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.

## COOPERATING AGENCIES

Several social agencies in the central San Joaquin Valley 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, Youth Authority, International Institute, American Red Cross, Veterans Administration Regional Office, Mental Health Association of Fresno, Fresno County Department of Public Welfare, Social Service Divisions of Agnews State Hospital, Atascadero State Hospital, Stockton State Hospital, and Porterville State Hospital, Kings County Schools, Santa Barbara County Welfare Department, Division of Protective Social Services of the State Department of Social Welfare, Fresno County Department of Mental Health Services, Paso Robles School for Boys, and Social Service Division of the United States Veterans' Administration Hospital. In addition, other agencies cooperate in the program.

**BACHELOR OF ARTS DEGREE MAJOR IN SOCIAL WELFARE**

	<i>Units</i>
Econ 1A-B, Anthro 2, Soc 1 .....	12
S Welf 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 Welf 122 .....	6
Elect from: Crim 120, 132, Econ 180, Bus Ad 105, Soc 111, 153, 163 .....	3
Elect from: Econ 131, Pol Sc 161, 163, 164A-B .....	3
Elect from: A Ed 153, Math 40, Psych 25, Soc 175 .....	3
Elect from: Psych 111, 116, 117, 118, 119, 120, 123, 147, 152F .....	3
	—
	53

**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 closely supervised field instruction. Emphasis will be upon social casework with some orientation to social group work, community organization, and administration. All degree students will be required to complete an individual thesis or a group 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), 279, 291 (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 (2 un).

4th Semester (13-16 un): SW 202, 222, 230 (2 un), 280 (2 un), 290 (1 un), 297 or 299 (2 un); optional elective.

*Note: Credit for SW 291 and 292 is applied to the contract program.*

**Courses****SOCIAL WELFARE****20. Social Welfare (3)**

Not open to freshmen or students with credit in Soc or S Welf 120. Prerequisite: Soc 1 or permission of instructor. 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.

**122. Child Welfare (3)**

Prerequisite: Soc 1 or permission of instructor. Recommended: Psych 119, S Welf 20, 121. Programs for physical, psychological, and social needs of children; institutions, foster homes, adoption, guidance clinics, protective and preventive services, services for handicapped; legislation.

**124. Fundamentals of Interviewing (3)**

Prerequisite: Soc 1 or permission of instructor. For social welfare, criminology, recreation, and education students. Principles and practice of interviewing in case work, group work, community organization, social research, correctional work, and related areas.

**127. Group and Community Services (3)**

Prerequisite: Soc 1 or permission of instructor. Group and community processes and social services to meet human needs.

**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 (1-2; max total 4)**

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.)

**SOCIAL WORK****GRADUATE COURSES**

*Note: Admission to the MSW program is prerequisite to all graduate courses unless otherwise stated.*

**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.

**272. Social Work in Rural Areas (2)**

Prerequisite: permission of Dean. The social worker's function with wide ranging problems and limited resources; problems of farm laborers, small farmers, isolation; utilization of appropriate techniques and methods.

**273. Seminar in Correctional Social Work (2)**

Prerequisite: permission of Dean. Program, problems, analysis of social work services in correctional field.

**274. Services for the Aging (2)**

Prerequisite: permission of Dean. Programs to meet the needs of the aging; income maintenance, health, living situation, use of leisure.

**275. Seminar in International Social Work (2)**

Prerequisite: permission of Dean. Problems and practices of social work outside of North America with emphasis on the application of social work knowledge, skills and practices in the developing parts of the world.

**279. Seminar in Community Development (2)**

Prerequisite: permission of Dean. Local self-help with aid of an outside agent; defining problems, assessing potential, encouraging local assumption of responsibility; using technical and specialized assistance.

**280. Seminar in Social Work Supervision (2)**

Prerequisite: permission of Dean. Administrative and educational functions of supervision; staff development; evaluation.

**281. Seminar in Group Services (2)**

Prerequisite: permission of Dean. Group work in group-serving programs and in other programs and agencies; recreational, informal educational, therapeutic, family service, children's services, correctional, and other settings.

**285. Financing of Social Welfare Programs (2)**

Prerequisite: permission of Dean. Public and private agency financing; long-term and short-term budgeting; single and intergovernmental programs; independent and federated funding of voluntary agencies.

**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 (2-4; max total 4)**

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 (2-4; max total 4)**

Prerequisite: SW 292. See *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

## FACULTY, 1967-1968

Full-Time Faculty .....	335
Part-Time Faculty .....	366
Emeriti .....	373



## FACULTY, 1967-1968

*Note: Numbers in parentheses indicate year of appointment at Fresno State College.*

- NESS, FREDERIC W. (1964), President; Professor of English  
BA, Dickinson College; MA, University of Cincinnati; PhD, Yale University.
- ABOU-GHORRA, IBRAHIM (1956), Professor of Psychology; Counselor  
BA, Cairo University; Diploma, Ain Shams University (Egypt); Diploma,  
Cairo Institute of Higher Studies; MA, Ohio State University; PhD, University  
of Southern California; Licensed Psychologist.
- ADAMS, ROBERT C. (1965), Assistant Professor of Speech  
BA, Idaho State College; MA, University of Oregon.
- AGNEW, ALLEN M. (1965), Assistant Professor of Office Administration  
BA, MA, San Jose State College; EdD, University of California at Los Angeles.
- AIKEN, JOYCE B. (1956; Spring 1962), Associate Professor of Art  
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  
BA, University of Virginia.
- ALDRICH, BEVERLY J. (1957), Psychometrist  
BA, University of Nebraska.
- ALDRICH, LESLIE L. (1955), Associate Professor of Industrial Arts and Tech-  
nology  
BA, Willamette University; MA, Oregon State College.
- ALKIRE,\* G. DON (1953), Professor of Mathematics  
BA, MA, University of South Dakota; EdD, University of Kansas.
- ALLEN, DERYLE K. (1961), Director of Counseling and Testing and Coordina-  
tor of Faculty Advising  
BA, Southwestern State College (Oklahoma); MEd, EdD, University of Okla-  
homa.
- ALLEN, LUCILE A. (Spring 1967), Assistant to the President  
BA, Trinity University; MA, Southern Methodist University; EdD, Columbia  
University.
- ALLISON, ROBERT J. (1967), Assistant Professor of Economics  
BA, MS, PhD, University of Colorado.
- ANDERSON, DAVID C. (1966), Assistant Professor of Management and Ac-  
counting  
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), Associate Professor of Physical Education  
BA, Fresno State College; MA, University of Southern California.
- ANGELL, MELVIN A. (1956), Counseling and Testing (on special assignment)  
BA, MA, EdD, University of Washington; Licensed Psychologist.
- ARCE, GINA (1957), Associate Professor of Botany  
BA, MA, George Peabody College; PhD., Vanderbilt University.

\* Deceased

- AUCHTER, EDMUND L. (1964), Assistant Professor of Economics (on leave)  
BS, Xavier University (Ohio); MA, Johns Hopkins University.
- AUSTIN, ELLIS T. (1958), Professor of Finance  
BA, University of Washington; PhD, Michigan State University.
- AVENT, JON C. (1965), Assistant Professor of Geology  
BA, University of Colorado; MS, PhD, University of Washington.
- AVERY, GEORGE E. (1959), Associate Professor of Education  
BS, Colorado State University; EdD, University of Maryland.
- AXTELL, J. DEWEY (1967), Intermediate Vocational Instructor in Animal  
Science  
BS, MS, Kansas State University.
- BADDIN, MELVIN M. (1948), Associate Professor of Music  
BM, MMus, Northwestern University.
- BAGDAZIAN, NAZALY (1966), Librarian II  
BA, MALS, University of Wisconsin.
- BAILEY, EVA G. (November 1962), Assistant Professor of Nursing  
BS, University of Arizona; MS, University of California at Los Angeles; Reg-  
istered Nurse.
- BAKKEGARD, BENJAMIN M. (1958), Associate Professor of Music and Educa-  
tion; Laboratory School Teacher  
BS, University of North Dakota; MEd, University of Minnesota; EdD,  
Teachers College, Columbia University.
- BALL, WILBUR P. (1958), Associate Professor of Agriculture and Education (on  
sabbatical leave)  
BS, MEd, Colorado State University; PhD, Iowa State 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.
- BATES, JAMES E. (1967), Field Instructor in Social Work (MCWD)  
BA, Gonzaga University; MSW, University of Washington.
- BATES, V. EDWARD (1965), Assistant Professor of Social Work  
BS, Brigham Young University; MSW, University of Utah.
- BATHURST, LEONARD H., JR. (1954), Director of Instructional Media Center;  
Professor of Education  
BA, MEd, EdD, Pennsylvania State University.
- BAUMANN, PATRICIA M. (1967), Field Instructor in Social Work (FCWD)  
BA, Fresno State College; MSW, Boston College.
- BAUMGARTNER, MARGARET M. (1963), Assistant Professor of Nursing  
BS, San Francisco College for Women; MS, University of California at San  
Francisco.
- BAUMWELL, KARL R., Major, USAF (1966), Assistant Professor of Aerospace  
Studies; Chairman, Aerospace Studies Department  
BA, DePaul University.
- BEACH, PHILIP F. (1964), Assistant Professor of Political Science  
BA, University of Washington; MA, PhD, Northwestern University.

- BEARD, C. NOBLE (1937), Professor of Geology; Chairman, Geology Department  
BA, MA, Indiana University; PhD, University of Illinois.
- BEATTY, HAROLD J. (1937), Professor of Physical Education  
BA, Fresno State College; MA, University of California.
- BEATTY, WILLIAM C., JR. (1947), Professor of Social Science; Chairman, Anthropology-Sociology Department  
BA, University of Denver; MA, University of Colorado; PhD, University of Southern California.
- BEDROSIAN, SARAH G. (1957; 1962), Associate Professor of Finance and Quantitative Studies  
BA, MA, Fresno State College; DBA, University of Southern California.
- BESLEY, KENNETH H. (1967), Executive Dean  
BA, University of Utah; MA, EdD, Teachers College, Columbia University.
- BEIDEN, J. PETER (1948), Associate Professor of Physical Education  
BA, University of Redlands.
- BELL, JESSE T. (Spring 1948), Principal Vocational Instructor in Agriculture; Chairman, Animal Science Department  
BS, Texas College of Arts and Industries; MA, Sul Ross State Teachers College.
- BENNETT, BOB L. (1955), Associate Professor of Music  
BA, Fresno State College; MS, Juilliard School of Music; DMA, Stanford University.
- BENNETT, SUSAN F. (1967), Assistant Professor of Social Work  
BEd, University of Hawaii; MSW, New York School of Social Work.
- BENSON, RAY (1964), Associate Professor of Business Law  
BA, Long Island University; LLB, Fordham University; MBA, University of California at Los Angeles.
- BERDAHL, ARTHUR C. (1932), Professor of Music  
BA, Augustana College; MA, PhD, State University of Iowa.
- BERGEY, BETTY J. (Spring 1968), Instructor in Nursing  
BS, Fresno State College; Registered Nurse.
- BERGEY, JOHN (1961), Associate Professor of Nursing  
BS, Yankton College; MA, University of Pittsburgh; Registered Nurse.
- BERRY, SARA C. (1957), Librarian III, Laboratory School  
BA, Occidental College.
- BEVILL, VINCENT D. (1957), Associate Professor of Engineering  
BS, Fresno State College; MS, University of California at Davis; Registered Mechanical Engineer.
- BIEHLER, WAYNE E. (1951), Principal Vocational Instructor in Agriculture; Chairman, Plant Science Department  
BS, Fort Hays Kansas State College; MS, University of California at Davis.
- BIGGE, MORRIS L. (1950), Professor of Educational Foundations (on sabbatical leave, spring)  
BA, Washburn Municipal University; MS, University of Michigan; PhD, University of Kansas.
- BIGGERSTAFF, WARREN R. (1948), Professor of Chemistry  
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), Associate Professor of English; Chairman, English Department  
BA, University of New Hampshire; MA, Boston University; PhD, State University of Iowa.
- BIRD, C. WESLEY (1932), Professor of Foreign Languages  
BA, MA, Oberlin College; Diplôme, Grenoble University; MA, PhD, Princeton University.
- BIRD, EDWIN E. (1967), Field Instructor in Social Work (AtSH)  
BS, University of Louisville; MSW, University of California.
- BLACK, BYRON A., JR. (Spring 1967), Assistant Professor of Linguistics; Vietnam Leadership-Scholarship Program  
BA, University of Texas.
- BLACKERBY, BRUCE A. (1963), Associate Professor of Geology  
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), Assistant 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.
- BLOMGREN, GLEN H. (1962), Associate Professor of Industrial Arts and Technology.  
BA, MA, Fresno State College.
- BLOOD, KENNETH H. (1966), Counselor  
BA, Hamline University; MS, PhD, Washington State University.
- BLUESTEIN, GENE (1963), Associate Professor of English (on leave)  
BA, Brooklyn College; MA, PhD, University of Minnesota.
- BLUESTONE, SYDNEY (1963), Associate Professor of Chemistry  
BS, Brooklyn College; PhD, Rutgers University.
- BOARD, ROBERT R. (1964), Registrar  
BS, University of Santa Clara.
- BOCKMAN, DAVID C. (1966), Assistant Professor of Industrial Arts and Technology  
BA, MA, Fresno State College.
- BOHNSTEDT, JOHN W. (1956), Associate 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.
- BOULSEN, FRANK M. (1948), Professor of Criminology; Chairman, Criminology Department  
BA, MA, University of California.
- BOWEN, WAYNE S. (1964), Assistant 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.
- BRASFIELD, CHARLES R. (1966), Counselor  
BA, MA, University of Texas.
- BRAUN, O. MARTIN (1936), Principal Vocational Instructor in Agriculture  
BS, MA, University of California.
- 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), Associate Professor of Linguistics;  
Chairman, Linguistics Department  
BA, Dana College; MA, University of Nebraska; PhD, University of Wash-  
ington.
- BRENNINGER, RALPH A. (1946), Professor of Foreign Languages  
BS, Lafayette College; MA, Columbia University; PhD, University of Cali-  
fornia.
- BREWER, RAY E. (1965), Assistant Director of Financial Aids  
BS, Kansas State University; MA, New Mexico State University; EdD, Uni-  
versity of Arizona.
- BRIGGS, PAUL E. (1967), Junior Vocational Instructor in 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 (California).
- BROCK, RICHARD K. (1966), Assistant Professor of Management and Marketing  
BA, MBA, University of Washington.
- BRODERICK, LEO J. (1967), Counselor, Psychiatrist  
BS, St. Joseph's College; MD, Hahnemann Medical College.
- BROOKS, ROBERT S. (1967), Housing Coordinator  
BA, University of Colorado; MEd, Ohio University.
- BROOKS, WAYNE A. (1956), Associate 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 (on leave, fall)  
BA, MA, Yale University.
- BROWN, FORREST D. (1947), Professor of Educational Psychology (on sab-  
batical leave, spring)  
BS, MS, Fort Hays Kansas State College; PhD, University of Cincinnati; Dip-  
lomite in Counseling.
- BROWN, SHELDON J. (1956), Professor of Physics  
BA, PhD, University of California at Los Angeles.
- BRYON, ARTHUR J. (1939; 1947), Professor of Music  
Normal Degree, San Francisco Conservatory of Music; BA, Fresno State Col-  
lege; 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.

- BUCKMAN, KARL E. (1942), Professor of Political Science; Chairman, Political Science Department  
BA, Fresno State College; MA, Claremont College.
- BURDICK, DONALD J. (1960), Associate Professor of Biology  
BA, San Jose State College; PhD, University of California.
- BURGESS, ROBERT C. (1947), Associate Professor of Physical Education  
BA, Fresno State College; MS, University of Southern California.
- BURRISS, MERLYN D. (1947; 1953), Associate Professor of Speech  
BA, Fresno State College; MA, University of California at Los Angeles.
- BURTNER, DALE C. (1958), Dean, School of Arts and Sciences; Professor of Chemistry  
BA, Reed College; MS, PhD, University of Washington.
- BURTON, BENJAMIN B. (1958), Associate Professor of Psychology  
BA, MA, PhD, University of Missouri; Licensed Psychologist.
- BUSH, P. DALE (1961), Associate Professor of Economics (on sabbatical leave, spring)  
BA, MA, University of Denver; PhD, Claremont Graduate School.
- BUTLER, DONALD (1966), Instructor in English  
BA, Stanford University; MA, Fresno State College.
- BUTTON, ALAN D. (1961), Associate Professor of Psychology  
BS, MA, University of Oregon; PhD, Stanford University.
- BUTTRICK, DON F. (1964), Assistant Professor of History at Bakersfield Center  
BA, MA, PhD, University of California.
- CADY, DOROTHY A. (1954), Laboratory School Teacher (on special assignment, Jamaica)  
BS, University of Minnesota; BA, MA, Fresno State College; Registered Nurse.
- 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; Chairman, History Department  
BA, Manhattan College; MA, PhD, University of California.
- CARNERO, JUAN J. (1963), Assistant Professor of Foreign Languages  
BA, Mexico City College; MA, Middlebury College (Vermont); PhD, University of Madrid (Spain).
- 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.
- CHANEY, HOMER C., JR. (1959), Associate Professor of Social Science at Bakersfield Center  
BA, Dartmouth College; MA, PhD, Stanford University.
- CHANG, HSU H. (1966), Assistant Professor of History  
BA, National Taiwan University; MA, University of Missouri; MS, Florida State University; PhD, University of Wisconsin.

- CHANG, LILLIAN T. (1966), Assistant Professor of Nursing  
BS, Peking Union Medical College; MPH, University of Michigan; MS, University of California Medical Center.
- CHAWNER, LOWELL J. (1967), Adjunct Professor of Finance and Industry  
BA, Occidental College; CE, Cornell University; MA, PhD, Harvard University.
- CHITTICK, ROGER D. (1956), Associate Professor of English (on sabbatical leave)  
BA, Butler University; MA, Washington State College; PhD, Stanford University.
- CHUTE, AARON H. (1966), Adjunct Professor of Management and Marketing  
BA, University of Michigan; MA, PhD, Ohio State University.
- CIULA, RICHARD P. (Spring 1961), Associate Professor of Chemistry; Chairman, Chemistry Department  
BA, Bowling Green State University; MS, University of California; PhD, University of Washington.
- CLARK, DAVID E. (1950; 1953), Professor of Chemistry (on leave)  
BA, University of Redlands; MS, PhD, Stanford University.
- CLINES, G. PATRICK (1967), Foreign Student Counselor  
BA, University of Santa Clara; MA, Fresno State College.
- COBB, DONN R. (1966), Physician  
BA, Fresno State College; MD, California College of Medicine.
- COBB, GWENDOLIN B. (1953), Professor of History  
BA, MA, PhD, University of California.
- COE, WILLIAM C. (1966), Assistant Professor of Psychology  
BS, University of California at Davis; PhD, University of California; Licensed Psychologist.
- COHEE, PADRAIC J. (1966), Assistant Professor of Foreign Languages  
BA, MA, University of California at Los Angeles.
- COLE, CHESTER F. (1947), Professor of Geography; Chairman, Geography Department (on sabbatical leave, fall)  
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.
- COLUCCI, STEPHEN L. (Spring 1968), Instructor in Physics  
BS, MS, Fresno State College.
- COLVER, A. WAYNE (1957), Professor of Philosophy; Assistant Dean, School of Arts and Sciences  
BA, University of California at Los Angeles; MA, PhD, Harvard University.
- COMEGYS, ROBERT G. (1955), Associate Professor of History  
BA, MA, University of Washington; PhD, Stanford University.
- COOPER, ARNOLD M. (1957), Associate Professor of Psychology  
BA, San Francisco State College; MA, PhD, Claremont Graduate School; Licensed Psychologist.
- COSTIS, HARRY G. (1967), Assistant Professor of Statistics and Quantitative Methods  
MS, University of Georgia; PhD, University of Texas.

- COWLING, WILLIAM H. (1967), Assistant Professor of English  
BA, Loyola University; MA, Indiana University.
- COWLING, SANDRA L. (1967), Librarian II  
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), Associate Professor of Geology  
PhD, University of Sciences (Budapest, Hungary); MA, PhD, Columbia University.
- CUNNINGHAM, WALTER M. (1967), Assistant Professor of Political Science  
BA, MA, California State College at Los Angeles.
- CYPHER, JAMES M. (1967), Lecturer in Economics  
BA, MA, University of California at Santa Barbara.
- DANDROY, MAXIMA A. (Spring, 1956), Associate Professor of Education  
BSE, National Teachers College (Philippines); MA, Arellano University (Philippines); EdD, Stanford University.
- DARGAHI, GHOLAM H. (1967), Lecturer in Political Science  
BA, University of Tehran; MA, University of Denver.
- DAUBS, EDWIN H. (1963), Assistant Professor of Biology  
BS, MS, PhD, University of Illinois.
- DAVIS, DONALD G., JR (1964), Librarian II  
BA, University of California at Los Angeles; MA, MLS, University of California.
- DAVIS, IRVING F. (1960), Associate 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; Registered Nurse.
- DAVIS, VIOLA A. (1955), Counselor  
BA, Pasadena College; MA, University of Southern California; PhD, Northwestern University.
- 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), Associate Professor of Music  
BA, University of Omaha; MMus, Northwestern University.
- DE TAR, WILLIAM R. (1956), Senior Vocational Instructor in Agriculture; Acting Chairman, Agricultural Mechanics Department (spring)  
BS, MS, University of California at Davis.
- DETTINGER, DONALD J. (1947), Associate Professor of Industrial Arts and Technology  
BA, Chico State College; MS, Oregon State College.
- DEWS, JON R. (1965), Assistant Professor of Physics  
BS, Fresno State College; PhD, University of California.
- DIENSTEIN, WILLIAM (1946), Professor of Social Science and Criminology  
BA, Stanford University; MA, University of California; PhD, Stanford University.

- DMITRIEW, HELEN L. (1967), Assistant Professor of Foreign Languages  
MA, University of Iowa.
- DODDS, JOHN P. (1964), Associate Professor of Agricultural Economics  
BS, MS, PhD, Iowa State University.
- DOKOOZLIAN, NICK (Spring, 1968), Lecturer in Plant Science  
BS, Fresno State College.
- DOMINICK, WAYNE P. (1964), Assistant Professor of Engineering (on leave)  
BSCE, Ohio Northern University; MSCE, New Mexico State University.
- DONALDSON, JOHN R. (1956), Professor of Physics (on sabbatical leave)  
BS, MA, Rice University; MS, PhD, Yale University.
- DONNELLY, KEVIN J. (1966), Assistant Professor of Physical Education and  
Recreation  
BS, California State College at Los Angeles; MS, San Francisco State College.
- DONOHUE, DONALD J. (1965), Assistant Professor of Mathematics  
BS, Fresno State College; MS, PhD, University of Oregon.
- DOSWALD, HERMAN K. (1967), Assistant Professor of Foreign Languages  
BA, University of California; MA, PhD, University of Washington.
- DOW, VIRGINIA M. (1961), Laboratory School Teacher  
BA, MA, Fresno State College.
- DOWLER, LLOYD (1948), Dean, School of Agriculture, Principal Vocational  
Instructor in Agriculture  
BS, MS, University of Wyoming.
- DOYLE, KATHERINE E. (1937; 1965), Associate Professor of Physical Education  
BA, Stanford University; MS, Wellesley College.
- 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  
BJ, University of Texas; MA, PhD, University of Southern California.
- DUNHAM, ARTHUR (Spring 1968), Lecturer in Social Work  
BA, Washington University; MA, University of Illinois.
- DUNNING, WILLIAM J. (1947), Professor of Industrial Arts and Technology  
BS, Iowa State Teachers College; MS, Iowa State College; EdD, University of  
North Dakota.
- DURANDO, MARY M. (1961), Laboratory School Teacher (on leave)  
BA, St. Mary College (Kansas); MA, Fresno State College.
- DUTTON, EDWARD P. (1967), Associate Professor of Social Work  
BS, University of California; MSW, Columbia University.
- ECHOLS, JAMES P. (1964), Assistant Professor of History (on leave)  
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.
- EGENOLF, JOHN J. (1966), Assistant Professor of Finance  
BA, MBA, University of Santa Clara.
- ELGORRIAGA, JOSE A. (1962), Associate Professor of Foreign Languages  
BA, Fresno State College; MA, 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), Assistant Professor of Social Work  
BA, University of Oklahoma; MSW, University of California at Los Angeles.
- EMERSON, JOHN T. (1959), Associate Professor of Quantitative Studies  
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), Associate 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.
- EVANS, RALPH F. (1947), Professor of Education (on special assignment, Chief  
of Party, Jamaica)  
BEEd, 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 Engi-  
neering  
BS, MSCE, California Institute of Technology; Registered Professional Engi-  
neer.
- 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, University of California at Los Angeles.
- FALK, DORIS F. (1946), Professor of Biology  
BA, MA, PhD, University of California.
- FALK, KARL L. (1938), Professor of Economics  
BA, Stanford University; PhD, University of Berlin.
- FAST, PETER G. (1957), Associate Professor of Education  
BA, Goshen College; MA, Ball State Teachers College; EdD, Indiana Uni-  
versity.
- FEUCHES, CONRAD (1946), Associate Professor of Industrial Arts and Tech-  
nology  
BA, Fresno State College; MS, Oregon State College.
- FIBEL, BARRY (1966), Field Instructor in Social Work (FCPD)  
BA, MSW, University of Washington.
- FIKES, JAMES A. (1955), Professor of Health Science  
BS, Central State College (Oklahoma); MPH, MEd, PhD, Oklahoma Uni-  
versity.
- FISHER, M. BRUCE (1941), Associate Vice President for Academic Planning;  
Professor of Psychology  
BA, University of California; PhD, Yale University; Licensed Psychologist.

- FISK, MCKEE (1948), Dean, School of Business; Professor of Business Administration  
BA, Oklahoma City University; MA, University of Southern California; PhD, Yale University.
- FLAKE, RHITA (1967), Assistant Professor of Physical Education  
BS, Brigham Young University; MA, San Jose State College; PhD, University of Southern California.
- FOIN, OWEN F., JR. (1942), Professor of Engineering  
BA, Fresno State College; Registered Electrical Engineer.
- FONG, RAYMOND G. (1963), Assistant Professor of Speech  
BA, Stanford University; MA, Sacramento State College.
- FOSTER, E. MERLE (1959), Associate Professor of Education at Bakersfield Center  
BA, MA, Colorado State College; PhD, State University of Iowa.
- FOSTER, HAGUE D. (1966), Assistant Professor of Philosophy  
BA, PhD, University of Chicago.
- FRANCIS, RICHARD W. (1965), Assistant Professor of Physical Education  
BA, San Jose State College; MA, Fresno State College.
- FRICKER, HENRY F. (1952), Professor of Health Science and Education; Chairman, 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.
- FULKERSON, WILLIAM M., JR. (1966), Assistant Professor of Speech  
BA, William Jewell College; MA, Temple University.
- GADE, WARREN E. (1966), Assistant Professor of History  
BS, University of San Francisco; MA, Stanford University.
- GAMMON, EDWARD R. (1966), Assistant Professor of Linguistics  
BA, Reed College; MA, University of Oregon; PhD, Stanford University.
- GARDNER, FANNIE L. (1959), Professor of Nursing; Chairman, Nursing Department  
BS, MEd, University of Houston; Registered Nurse.
- GARRIGUS, CHARLES B., Jr. (1967), Assistant Professor of English  
BA, San Francisco State College; MA, Fresno State College.
- GATTEN, JOHN T. (1965), Assistant Professor of English  
BA, MA, Michigan State University; MFA, University of Iowa.
- GAYLORD, EDWARD H. (1957), Associate Professor of Engineering  
BS in EE, Colorado State University; MS in EE, University of Colorado; Registered Electrical Engineer.
- GEERDES, CLAYTON E. (1965), Assistant Professor of English  
BA, MA, San Francisco State College.
- GERARD, MARIAN M. (1949), Laboratory School Teacher  
BA, Mills College; MA, Fresno State College.
- GETZE, JAMES K. (1966), Assistant to Director of Community Relations  
BA, University of California.
- GIGLIOTTI, HELEN J. (1966), Assistant 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.

- GLEASON, KENNETH C. (1946), Professor of Physical Education  
BA, Fresno State College; MS, University of Southern California.
- GLIM, ROBERT J. (1948), Principal Vocational Instructor in Agriculture; Acting Assistant Dean, School of Agriculture  
BS, MEd, University of California at Davis.
- 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.
- GOTHE, ARTHUR G. (Spring 1965), Librarian II  
BA, University of California at Santa Barbara; MLS, University of California.
- GOUVEIA, JOAN (1967), Laboratory School Teacher  
BA, Fresno State College.
- GRAHAM, GAYLORD O. (1957), Associate Professor of Speech  
BA, MA, State University of Iowa.
- GREEN, HAROLD E. (1966), Director of Community Relations  
BSJ, Northwestern University.
- GREENE, ELEANOR R. (1960), Assistant 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.
- GREGORY, EDDIE J. (1965), Associate Professor of Physical Education  
BS, Pepperdine College; MS, University of Southern California.
- GRIFFITHS, I. ACE (1959), Associate Professor of Education  
BS, University of Idaho; MS, University of Arizona; EdD, Colorado State College; Licensed Psychologist.
- GROSSMAN, JOEL S. (1965), Assistant Professor of Psychology  
BA, University of Michigan; MS, PhD, Western Reserve University.
- GROTE, ALBERT O. (1967), Assistant Professor of Engineering  
BS, MSCE, California Institute of Technology.
- 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.
- GUZMAN, PAULA S. (1967), Instructor in Physical Education and Recreation  
BA, Fresno State College.
- GYSLER, RANDOLPH L. (1966), Assistant Professor of Industrial Arts and Technology  
BS, MA, Kent State University.
- HADDAD, MARIE N. (1964), Assistant 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.
- HAEHL, JOHN H. (Spring 1968), Lecturer in Economics  
BA, Fresno State College.

- HAFFNER, SUSANNE A. (1965), Librarian II  
BA, University of Oregon; ML, University of Washington.
- HAGGBLADE, BERLE (1963), Associate Professor of Office Administration  
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.
- HAIRABEDIAN, ARA (1953), Professor of Physical Education  
BS, University of Southern California; MEd, Pennsylvania State College; EdD, Stanford University.
- HALE, HARRY J., JR. (1967), Lecturer in Anthropology-Sociology  
BA, Fresno State College; PhD, University of Tennessee.
- HALPER, DONALD G. (1955), Professor of Management, Chairman, Management and Marketing Department (on leave)  
BA, MS, University of Illinois; PhD, Stanford University.
- HAMPTON, ROBERT E. (1956), Professor of Management; Assistant Dean, School of Business  
BBA, Golden Gate College; MA, Chico State College; EdD, Stanford University.
- HANSEN, JULIA A. (1962), Assistant 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).
- HARLAN, RONALD J. (1956), Librarian II  
BA, Fresno State College; MLS, University of California.
- HARMON, WALLACE M. (1965), Assistant Professor of Biology  
BS, The Colorado College; MS, Syracuse University; PhD, University of California at Los Angeles.
- HARRISON, RAYMOND H. (1955), Professor of School Administration  
BS, Central State College; MS, Oklahoma State University; EdD, University of Denver.
- HARRISON, ROBERT D. (1954), Senior Vocational Instructor in Agriculture  
BS, University of Michigan; MS, Michigan State College.
- HART, FRANCIS A. (1965), Assistant Professor of English  
BA, Harvard University; MA, University of Utah.
- HASAN, SYED M. J. (Spring 1968), Assistant Professor of Management and Marketing  
BCom, MCom, University of Karachi; MBA, University of Southern California.
- HASSON, ALLEN (1966), Assistant Professor of Education  
BS, Brigham Young University; MA, EdD, Arizona State University.
- HAWBECKER, ALBERT C. (1946), Professor of Biology  
BA, Fresno State College; MA, University of California; PhD, Oregon State College.
- HAYS, HARRIETT N. (1967), Assistant Professor of Linguistics  
BA, Brown University.

- HEGRENES, MILDRED J. (1967), Lecturer in Speech Arts  
BS, Moorhead State College; MS, Washington State University.
- HELLE, REIJO (Spring 1968), Lecturer in Geography  
BA, Turke University (Finland).
- HENDERSON, WALLACE D. (1958), Assistant to the President; Associate Professor of Speech  
BA, Fresno State College.
- HENDRICKSON, MARY R. (1966), Assistant 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.
- HIGGINS, FRANCIS V. (1958), Associate 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.
- HILL, ROBERT W. (1967), Assistant Professor of Accounting  
BS, MBA, University of California.
- HILLMAN, STEPHANIE (1958), Librarian III  
BA, University of California at Los Angeles; MLS, University of California.
- HIXSON, FLOYD M. (1951), Principal Vocational Instructor in Agriculture  
BS, Oklahoma State University; MS, PhD, Kansas State University.
- HODGENS, UNA S. (1966), Associate Professor of Education  
BS, University of Utah; MA, Columbia University.
- HOGAN, ANNE B. (1964), Field Instructor in Social Work (CDSW)  
BA, Vassar College; MSW, University of Pennsylvania.
- HOGAN, HILDA M. (1964), Assistant Professor of Nursing  
BS, MS, Boston University.
- HOLDER, WAYNE B. (1955), Associate Professor of Psychology  
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 II  
BA, Fresno State College; MLS, University of California at Los Angeles.
- HOWARD, SUSAN D. (1967), Activities Adviser  
BS, Michigan State University; MS, Western Illinois 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, University of California.
- HUFF, ARTHUR E. (1964), Assistant Professor of Music  
BA, MA, San Jose State College.
- HUGHES, JOAN D. (1958), Associate Professor of Education at Bakersfield Center  
BA, San Jose State College; MA, Stanford University; EdD, University of California.

- HUNT, MAURICE P. (1948), Professor of Educational Foundations  
BS, MA, PhD, Ohio State University.
- HUPPRICH, MABEL (1944), Associate Professor of Physical Education  
BS, MS, University of Wisconsin.
- HYMOVICH, DEBRA P. (1964), Assistant Professor of Nursing (on leave)  
BS, Skidmore College; MA, Teachers College, Columbia University.
- ILG, GEORGE F. (1948), Assistant Dean, School of Agriculture; Principal Vocational Instructor in Agriculture (on special assignment, Project Director, Peace Corps)  
BS, University of California; MS, Ohio State University.
- INGHAM, IRIS M. (1967), Laboratory School Teacher  
MSL, University of Oregon.
- IRWIN, PHYLLIS A. (1963), Associate Professor of Music  
BS, MEd, University of Houston; EdD, Columbia University.
- JACOBSEN, ERLAND L. (1959), Librarian III  
BA, Stanford University; MLS, University of California.
- JARRETT, McRAE (1957), Associate Professor of Engineering  
BS in EE, MS, University of Tennessee.
- JASUTIS, CORDELIA (1959), Associate Professor of Foreign Languages  
Lic-es-Let, University of Paris; MA, PhD, State University of Iowa.
- JENKIN, SHIRLEY A. (1963), Assistant Professor of Nursing  
BSN, Washington State University; MN, University of Washington; Registered Nurse.
- JENKINS, JACK T. (1961; 1964), Associate Professor of Social Work  
BSSW, University of Arkansas; MSSW, University of Tennessee.
- JENNINGS, WILMAR A., JR. (1966), Assistant Professor of Psychology  
BA, Brown University; MA, University of Portland; PhD, Rutgers, The State University.
- JENSEN, CLARENCE D. (1947), Principal Vocational Instructor in Agriculture; Chairman, Agricultural Mechanics Department (on sabbatical leave, spring)  
BA, Chico State College; MS, Oregon State College.
- JEPSEN, VICTOR L. (1946), Professor of Management  
BA, MA, University of Oregon; EdD, Stanford University.
- JOHNSON, ALAN H. (1963), Assistant Professor of Geography  
BS, MA, University of Missouri.
- 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), Assistant Professor of Education  
BS, MS, Oregon College of Education; EdS, Stanford University; EdD, University of Oregon.
- JOHNSON, RAYMOND W. (1965), Assistant Professor of Management and Marketing  
BS, University of California; MBA, University of Washington.
- 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.

- JOSEPH, RAE JEAN (1967), Physician  
BA, Stanford University; MD, Stanford Medical School.
- JUDD, FLOYD L. (1967), Assistant Professor of Physics  
BS, Carroll College; MS, PhD, Iowa State University.
- JULIANA, JOSEPH R. (1958) Associate Professor of Physical Education and Recreation (on leave)  
BS, Temple University; MEd, University of Pittsburgh.
- KALB, LOIS M. (Spring 1968), Assistant Professor of Psychology  
PhD, Cornell 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.
- KARIKKA, KATHERINE J. (1967), Assistant Professor of Home Economics  
BS, Utah State University; MS, Cornell University.
- KARLE, HARRY P. (1962), Senior Vocational Instructor in Agriculture  
BS, Fresno State College; MS, PhD, University of California at Davis.
- KARR, HAROLD S. (1966), Assistant 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.
- KAUFMAN, JACK (1965), Assistant Professor of Social Welfare  
BA, University of Chicago; MSW, University of Minnesota.
- KAUSCH, DONALD E. (1965), Assistant 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.
- KELLOGG, GARY B. (1961), Librarian III  
BA, University of Colorado; MA, University of Denver.
- KENNEDY, CELESTE K. (1965), Assistant Professor of Physical Education  
BS, Washington University; MA, Humboldt State College.
- KENSEL, WILLIAM H. (1965), Assistant Professor of History  
BA, University of Washington; BA, MEd, Central Washington State College; PhD, Washington State University.
- KENYON, ROBERT A., II (1966), Assistant Professor of Sociology  
BA, Colorado University; MA, Oklahoma University.
- KERBOW, LLOYD K. (1967), Lecturer in History  
BA, Texas Technological College; MEd, North Texas State University.
- KERR, KENNETH M. (1967), Assistant Dean of Students  
BA, Wagner College; MS, PhD, Indiana University.
- KERSHAW, JOYCE (Spring 1967), Assistant Professor of Social Work  
BA, Fresno State College; MSW, University of California at Los Angeles.
- KIMBERLY, MAX E. (1958), Associate Professor of Health Science  
BS, MS, Montana State College; MA, EdD, Stanford University.

- KINDER, RICHARD J., Captain USAF (1966), Assistant Professor of Aerospace Studies  
BGE, University of Omaha.
- KINZEL, PAUL F. (1963), Assistant Professor of Foreign Languages (on special assignment, Resident Director, CSC International Programs)  
BA, Fresno State College; MA, Columbia University; PhD, University of Washington.
- KIPPS, THOMAS C. (1956), Professor of Mathematics; Chairman, Mathematics Department  
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.
- 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), Assistant Professor of History  
BA, University of British Columbia; MA, PhD, University of Southern California.
- KNUDSEN, ROBERT G. (1964), Coordinator, Foreign Student Program  
BS, MS, Utah State University.
- KOLSTAD, WILLIAM A. (1964), Assistant Professor of Political Science  
BA, Macalester College; LLB, University of Minnesota; MA, University of South Dakota; PhD, University of Texas.
- KRELL, FRED C. (1963), Assistant Professor of Nursing  
BSN, State University of Iowa; MS, Boston University; Registered Nurse.
- KREMEN, BENJAMIN G. (1950), Professor of Education (on sabbatical leave)  
BS, Johns Hopkins University; MA, University of Maryland; PhD, Michigan State College.
- KRUGER, JOHN H., JR. (1964), Associate Professor of Industrial Relations; Acting 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.
- KUSEL, HEINZ N. (1965), Assistant Professor of Art  
BS, Skidmore College; MA, Fresno State College.
- LABARRE, ANTHONY E., JR. (1961), Professor of Mathematics  
BE, MS, Tulane University; PhD, University of Oklahoma.
- LAMBERT, HAZEL M. (1955), Associate Professor of Education  
BA, College of St. Scholastica; BEd, Superior State College; MA, University of Minnesota; PhD, University of North Carolina.
- LANDRUM, ELIZABETH A. (1932), Librarian III  
BA, Fresno State College; MA, University of California.
- LANGE, IAN M. (Spring 1968), Assistant Professor of Geology  
BA, MA, Dartmouth College; PhD, University of Washington.

- LATIMER, HOWARD L. (1958), Associate Professor of Biology  
BS, MS, State College of Washington; PhD, Claremont Colleges.
- LAURY, FRANK B. (1959) Associate Professor of Art; Chairman, Art Department  
BA, Iowa State Teachers College; MA, Stanford University; BS, MS, University of California.
- LEAVENWORTH, RUSSELL E. (1955), Professor of English (on sabbatical leave, fall)  
BA, Hanover College; MA, PhD, University of Colorado.
- LEAVITT, GEORGE S. (1955), Professor of Psychology (on sabbatical leave)  
BA, Macalester College; MA, PhD, University of California; Licensed Psychologist.
- LEE, ROBERT E. (1964), Assistant Professor of Geography  
BA, MA, San Jose State College; PhD, University of California at Los Angeles.
- LESLIE, GLENN F. (1958), Professor of Education; Chairman, Elementary Education Department  
BS, Central Missouri State College; MEd, EdD, University of Missouri.
- LEVALLEY, W. I. LOUIS (1954), Senior Vocational Instructor in Agriculture  
BA, Eugene Bible University; BS, MEd, University of California at Davis.
- LEVIN, CARL (1942), Business Manager  
BA, Fresno State College.
- LEVINE, PHILIP (1958), Associate 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 (on leave, fall)  
BS, University of Chicago; MSEE, University of Idaho.
- 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; Chairman, Psychology Department  
BA, Fresno State College; PhD, University of Chicago; Licensed Psychologist.
- LISKEY, NATHAN E. (1965), Assistant Professor of Health Science  
BA, LaVerne College; MS, Indiana University.
- LIST, EDGAR A. (1961), Associate Professor of Foreign Languages; Chairman, Foreign Language Department  
BA, Carroll College; MA, PhD, Yale University.
- LIVINGSTON, WILLIAM H. (1966), Assistant Professor of Industrial Arts and Technology  
BS, University of California.
- LOGAN, BARRY L. (1961), Associate Professor of English (on sabbatical leave)  
BA, MA, Syracuse University; PhD, Yale University.
- LOGANBILL, G. BRUCE (1966), Assistant Professor of Speech  
BA, Bethel College; MA, University of Kansas; PhD, Michigan State University.

- LOMBARD, EDWIN H. (1947), Professor of Speech  
BA, Oberlin College; MA, Columbia University; MA, PhD, Cornell University.
- LORING, JANET (1957), Associate Professor of Speech  
BS, Northwestern University; MA, University of Missouri; PhD, State University of Iowa.
- LOWERY, CHARLOTTE M. (1964), Librarian II  
BSLS, Western Reserve University (Ohio); MA, University of Southern California.
- LUND, EDWARD O., JR. (1966), Assistant Professor of Art  
BS, University of Wisconsin; MFA, Indiana University.
- LUNDBERG, JAMES B. (1960), Assistant Professor of Education  
BS, North Texas State College; MA, Michigan State University.
- LYON, EARL D. (1938), Professor of English  
BA, University of California at Los Angeles; MA, PhD, University of California.
- LYONS, DAVID J. (1967), Assistant Professor of Mathematics  
BS, Boston College; MS, Carnegie Institute of Technology.
- 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.
- 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.
- MARGOSIAN, ARTHUR H. (1956; 1961), Associate Professor of Journalism  
BA, MA, Fresno State College.
- MARK, ALBYN K. (1966), Assistant Professor of Anthropology  
BA, MA, University of Arizona.
- MARKHAM, CHARLES G. (1967), Assistant Professor of Geography  
BA, University of California at Los Angeles; MA, Colorado State College.
- MARTIN, HOWARD J. (1965), Intermediate Vocational Instructor in Agricultural Mechanics  
BSAE, California State Polytechnic College.
- MARTIN, JOHN E. (1959), Associate Professor of Education  
BA, Central State College (Oklahoma); MEd, EdD, University of Oklahoma.
- MARTIN, JOHN H. (1962), Assistant Professor of Music  
BS, MA, Ohio State University; EdD, University of Arizona.
- MASON, R. ELAINE (1956), Associate 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), Assistant Professor of Art  
BA, MA, University of California.
- MAXSON, DOROTHY E. (1958, 1965), Assistant Professor of Nursing  
BS, San Francisco College for Women; MS, University of Colorado; Registered Nurse.

- McCLINTIC, J. ROBERT (1954), Professor of Biology  
BA, San Diego State College; PhD, University of California.
- McCOMAS, WAYNE L. (1953), Associate Professor of Industrial Arts and Technology (on leave)  
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.
- McDOUGALL, THOMAS (1966), Assistant Professor of Art  
BA, San Jose State College; MA, San Fernando Valley State College.
- McGUIRE, PAUL J. (1966), Coordinator of Academic Administration; Lecturer in 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.
- McKNIGHT, H. RAY (1965), Assistant Professor of English  
BA, Harvard College; MA, PhD, University of North Carolina.
- MEEKER, MURIEL (1950), Laboratory School Teacher  
BA, San Francisco State College; MA, Fresno State College.
- MERKLEY, PAUL C. (1964), Assistant Professor of History  
BA, MA, PhD, University of Toronto.
- 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.
- MEZEY, ROBERT (Spring 1967), Assistant Professor of English  
BA, University of Iowa.
- MICCICHE, PAULINE F. (1966), Librarian II  
BA, University of Buffalo; MS, Canisius College; MLS, Western Reserve University.
- MIGDAL, SEYMOUR (1967), Assistant Professor of English  
BA, City College of New York; PhD, University of California at Davis.
- MILLER, CARL E. (1961), Associate Professor of Education at Bakersfield Center  
BS, Anderson College (Indiana); MA Eastern New Mexico University; EdD, Texas Technological College.
- MILLER, WILLIAM M. (1956), Associate Professor of Chemistry  
BS, University of Illinois; MS, PhD, State University of Iowa.
- MINICH, MARSHALL E. (1966), Lecturer in Finance and Industry  
BS, Lafayette College; MBA, Harvard Business School.
- MINICK, ROBERT A., JR. (1962), Associate Professor of Economics; Chairman, Economics Department  
BS, MS, North Texas State College; PhD, University of Texas.
- MINSCHREW, WILLIAM E., JR. (Spring 1963), Assistant Professor of Art  
BS, Atlantic Christian College; MFA, University of North Carolina.
- MITCHELL, T. RUSSELL (1967), Admissions Officer  
BA, MA, Fresno State College.
- MOERK, ERNST (1967), Assistant Professor of Psychology  
PhD, University of Innsbruck.
- MOLEN, DAYLE H. (1965), Assistant Professor of Journalism  
BA, University of Idaho; MS, University of Oregon.

- MONSEN, CAROL L. (1966), Assistant Professor of Nursing  
BS, Boston University.
- MONTGOMERY, RICHARD C. (1966), Professor of Geography  
BS, University of Idaho; MA, PhD, University of Nebraska.
- MONTGOMERY, SHARON B. (Spring 1967), Assistant Professor of Philosophy  
BA, MA, University of Pennsylvania.
- MOORE, HEYWARD, JR. (1965), Assistant Professor of Political Science (on leave)  
BA, University of North Carolina; MA, University of Florida; PhD, University of North Carolina.
- MORANDA, MARION J. (1967), Assistant Professor of Nursing  
BS, Fresno State College; MS, University of California at Los Angeles.
- MORI, NOBUO (1967), Assistant Professor of Social Work  
BS, MSW, University of Utah.
- MORRISSEY, JAMES R. (1966), Professor of Social Work  
BA, New England College; MSSS, Boston University; DSW, University of Southern California.
- MOSS, STANLEY S. (1965), Associate Professor of Social Work  
BSS, College of City of New York; MSW, Rutgers, The State University.
- MULLENNIX, GRADY L. (1958), Professor of Economics  
BS, MS, North Texas State College; PhD, University of Texas.
- MURPHY, JOSEPH B. (1949), Professor of Education  
BS, Brigham Young University; MS, University of Utah; EdD, Stanford University.
- MUSSELMAN, DARWIN B. (1953), Professor of Art  
BA, Fresno State College; MFA, California College of Arts and Crafts; MA, University of California.
- MYERS, WILLIAM R. (1966), Building Coordinator  
BS, Fresno State College.
- NAGY, ELEMER J. (1960; 1962), Associate Professor of Foreign Languages  
MA, PhD, P. Pazmany University (Budapest).
- NALBANDIAN, LOUISE (1963), Assistant Professor of History  
BA, San Francisco State College; MA, PhD, Stanford University.
- NASSE, GEORGE N. (1965), Associate Professor of Geography; Acting Chairman Geography Department (fall)  
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, DON D. (Spring 1964), Intermediate Vocational Instructor in Agriculture (on leave)  
BS, Fresno State College; MS, University of California at Davis.
- NELSON, MYRTHEL S. (1965), Assistant Professor of Nursing  
BA, College of Great Halls; MA, Gallaudet College; MA, Columbia University; MN, Yale University.
- NEWCOMB, RICHARD F. (Spring 1956), Associate 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.
- NEWSOME, RATANA (1961), Associate Professor of Home Economics; Chairman, Home Economics Department  
BA, Chulalongkorn University (Thailand); MS, PhD, Florida State University.
- NEWTON, JAMES B., JR. (1966), Assistant Professor of Speech  
BFA, University of Texas; MFA, Yale University.
- NICKLETT, GEORGIA E. (1965), Assistant Professor of Music; Coordinator of Graduate Studies  
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.
- NIXON, ARNE J. (1961), Director of Extension; Associate Professor of Education  
BS, Ellendale State Teachers College (North Dakota); EdM, Western Washington College of Education; EdD, Teachers College, Columbia University.
- NJISANE, MLAHLENI (1967), Assistant Professor of Sociology  
BA, University of South Africa; MA, University of Natal (SA).
- NORSWORTHY, STANLEY F. (1966), Assistant Professor of Geography  
BA, University of California at Los Angeles; MA, Miami University.
- NORTON, RICHARD (1963), Intermediate Vocational Instructor in Agriculture  
BA, Fresno State College.
- NUR, HUSSAIN SAYID (1967), Assistant Professor of Mathematics  
BS, University of Bagdad; MA, PhD, University of California.
- O'BRIEN, JOHN C. (1965), Assistant Professor of Industrial Economics  
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.
- O'NEIL, ROBERT M. (1957), Associate Professor of English  
BA, MA, Montana State University; PhD, University of Washington.
- OPPER, S. MICHAEL (1965), Assistant Professor of Art  
BS, Southern Connecticut State College; M.A., Columbia University.
- PANDITHARATNA, BERNARD L. (1967), Lecturer in Geography  
BA, University of Ceylon; MS, University of Philippines; PhD, University of London.
- PAPE, LAURENCE A. (1951), Professor of Physical Education  
BA, MA, Ohio State University; EdD, Columbia University.
- PARKER, LILLIE A. (1951), Librarian IV  
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.
- PAUL, MARTIN T. (1967), Assistant Professor of English  
BA, College of the Holy Cross; MA, University of Wisconsin.

- PAUL, RICHARD W. (1966), Assistant Professor of Philosophy  
BA, Northern Illinois University; MA, University of California at Santa Barbara.
- PELLA, CARMEN (1963), Associate Professor of Foreign Languages  
MA, University of Michigan; Dr. Ped., University de la Habana.
- PETRUCCI, VINCENT E. (1948), Principal Vocational Instructor in Agriculture (on sabbatical leave, spring)  
BS, MS, University of California at Davis.
- PFLUEGER, CLAYTON C. (1959), Senior Vocational Instructor in Agriculture  
BS, South Dakota State College; MS, State College of Washington.
- PICKEL, DONNA RAE (1967), Assistant Professor of Physical Education  
BS, Oklahoma Baptist University; MS, Smith College.
- PICKFORD, PATRICIA R. (Spring 1957), Associate Professor of Social Work  
BA, Fresno State College; MSW, University of California at Los Angeles.
- PIEPER, W. ALAN (1963), Assistant Professor of Psychology (on leave)  
BA, MA, Fresno State College; PhD, University of Missouri.
- PIERSON, ALVIN P. (1941), Professor of Finance and Industry  
BA, University of Nevada; MA, University of Florida; EdD, Stanford University.
- PIETROWSKI, ROBERT F. (1967), Lecturer in Management  
BA, MBA, Stanford University.
- PIGG, C. JOANNE (1964), Assistant Professor of Biology  
BA, Arizona State University; MS, PhD, Oregon State University.
- PINKOSKI, JAMES H. (Spring 1968), Director, Computer Center  
BS, Wisconsin State College.
- PISCIOTTOLI, LOUIS F. (1967), Lecturer in Economics  
BA, Boston College.
- PITT, JACK A. (1957), Associate Professor of Philosophy; Chairman, Philosophy Department  
BS, Sir George Williams College (Canada); BA, MA, McGill University (Canada); PhD, Yale University.
- PLAFKIN, EDWARD L. (1966), Assistant Professor of Political Science (on leave, fall)  
BA, Brandeis University; MA, PhD, University of California.
- POOLE, PATRICK H. (1966), Assistant Professor of Education  
BA, University of Tulsa; MS, Kansas State College.
- PORCH, LOUISE W. (1942), Professor of Home Economics  
BS, Rockford College; MA, Columbia University; EdD, Stanford University.
- POSEY, CLYDE L. (1966), Assistant Professor of Accounting and Quantitative Studies  
BBA, Texas Western College; MBA, University of Texas; CPA, Texas.
- POSS, STANLEY H. (1956), Associate Professor of English  
BA, University of Redlands; MA, Claremont Graduate School; PhD, University of Washington.
- POSTON, BILLIE L. (1966), Instructor in 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.
- PRONIN, ALEXANDER (1965), Assistant Professor of Foreign Languages  
BA, University of California; PhD, Georgetown University.
- PROVOST, DAVID H. (1958), Associate Professor of Political Science (on leave, fall)  
BA, Pomona College; PhD, University of Queensland (Australia).
- QUIBELL, EDITH M. (1947), Librarian II, (retired, April 1968)  
BA, Pomona College.
- RANDALL, CHARLES H. (1962), Associate Professor of Speech  
BA, Central Washington College of Education; MFA, Yale University.
- RANDOLPH, HELEN L. (1963), Assistant Professor of Elementary Education  
BA, MEd, University of Portland.
- REA, RALPH C. (1954), Professor of Music; Chairman, Music Department  
BM, Eastman School of Music; MA, PhD, State University of Iowa.
- REA, THELMA M. (1958), Associate Professor of Education (on sabbatical leave, fall)  
BS, MS, University of Idaho; EdD, Stanford University.
- REES, BRYANT E. (1947), Professor of Biology  
BA, MA, University of Utah; PhD, Stanford University.
- REGIER, ROBERT D. (1967), Assistant Professor of Engineering  
BS, Fresno State College; MS, Stanford University.
- REHART, B. SCHYLER, JR. (Spring 1963), Assistant Professor of Journalism  
BA, MA, Fresno State College.
- REIGHARD, EDWARD (Spring, 1960), Associate Professor of Management (on sabbatical leave, spring)  
BA, Middlebury College; BD, Yale University; MBA, PhD, Stanford University.
- REITMAN, SANDFORD W. (1966), Assistant Professor of Education  
BA, Ohio University; MA, Western Reserve University.
- RICH, WALLACE N. (1963), Associate 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 I  
BA, Sacramento State College; MLS, University of California.
- RIES, JOACHIM S. (1964), Assistant 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.
- ROBINSON, ETHEL A. (1946; 1950), Associate Professor of Mathematics  
BA, MA, Stanford University.
- ROCKWELL, JAMES H. (1957), Associate Professor of Industrial Arts and Technology (on research-creative leave, spring)  
BS, Stout Institute; MS, Bradley University.
- RODEMEYER, STEPHEN A. (1967), Assistant Professor of Chemistry  
BS, St. Thomas College; PhD, University of California.

- ROHRER, HELEN F. (1933), Professor of Office Administration and Business Education; Chairman, Department of Office Administration  
BA, MA, Stanford University.
- ROHRER, MARTHA D. (1958), Associate Professor of Home Economics  
BA, San Jose State College; MS, Oregon State College.
- ROGERS, DARRYL D. (Spring 1966), Lecturer in Physical Education  
BA, University of Denver; MA, Fresno State College.
- ROSE, CARLENE (1951), Associate Professor of Home Economics  
BS, University of Minnesota; MS, Oregon State College.
- ROTH, HOWARD C. (1967), Assistant Professor of Foreign Languages  
BA, Fresno State College; MA, University of California.
- 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), Assistant Professor of Political Science  
BA, MEd, Whittier College; MA, Claremont Graduate School.
- ROUSEK, EDWIN J. (1948), Principal Vocational Instructor in Agriculture  
BS, University of Nebraska; MS, Cornell University.
- ROWLAND, WALTER F. (1967), Associate Professor of Engineering  
BS, MS, University of Illinois.
- RUHL, ERVING C. (1967), Assistant Professor of Social Work  
BA, Monmouth College; MA, University of Chicago.
- RUIZ, LEOPOLDO T. (1967), Lecturer in Sociology at Bakersfield Center  
BA, University of California; MA, Columbia University; PhD, University of Southern California.
- RUSSELL, KENNETH H. (1963), Associate Professor of Chemistry (on research-creative leave, spring)  
BS, Portland State College; PhD, Washington State University.
- SALGADO, RALPH H., JR. (1965), Assistant Professor of Speech  
BA, MA, University of Arizona.
- SCHMITT, GERHARD (Spring 1967), Assistant Professor of Philosophy  
BA, MA, University of California.
- 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.
- SCHROER, DALE F. (1963; Spring 1965, Spring 1966), Lecturer in Education  
BS, University of Cincinnati; MA, Columbia University.
- 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), Assistant 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.
- SELKIRK, ROBERT J., JR. (1948), Principal Vocational Instructor in Agriculture  
BS, MEd, University of California at Davis.
- SENESE, DONALD L. (1965), Assistant Professor of History  
BA, Harvard University.
- SHACKLETT, ROBERT L. (1949; 1955), Assistant Academic Vice President;  
Professor of Physics  
BA, Fresno State College; PhD, California Institute of Technology.
- SHAW, JOHN A., JR. (1965), Assistant Professor of Economics  
BA, San Diego State College; MS, Purdue University.
- SHAW, ROGER L. (1964), Assistant Professor of Mathematics  
BA, MA, University of Denver.
- SHEEHAN, PAUL V. (1930), Professor of Journalism; Chairman, Journalism  
Department  
BA, MA, University of Washington; PhD, University of Southern California.
- SHEPARD, BERNARD A. (1948), Professor of Journalism  
BA, Union College; BS, Columbia University; MS, PhD, Syracuse University.
- SHOCKLEY, JAMES T. (1951; 1956), Associate Professor of Physics (on sabbatical leave, spring)  
BA, MA, Fresno State College; PhD, University of Southern California.
- SIA, MING BE (1964), Assistant Professor of Nursing  
BA, Hwa Nan College (China); MA, Teachers College, Columbia University.
- SILVANI, HAROLD (1962), Laboratory School Teacher  
BA, Fresno State College.
- SIMPSON, ELIZABETH P. (1965), Assistant Professor of Elementary Education;  
Operation Fair Chance  
BA, 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.
- SLOAN, FORREST E. (1954), Professor of Elementary Education  
BS, Illinois State Normal University; MA, EdD, Colorado State College.
- SMALLEY, R. GAYLE (1963), Assistant Professor of Art  
BFA, Rochester Institute of Technology; MFA, Indiana University.
- SMARDAN, LAWRENCE E. (1966), Professor of Home Economics  
BA, MS, University of Southern California; PhD, Cornell University.
- SMETHERMAN, ROBERT M. (1967), Assistant Professor of History  
BA, Claremont Men's College; MA, Los Angeles State College; PhD, Claremont Graduate School.
- SMITH, CHARLENE K. (1960), Associate 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 MITCHELL (1965), Assistant Professor of Psychology  
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), Associate Professor of Biology  
BA, PhD, University of California.
- SOLLIE, ALICE J. (Spring 1959), Assistant 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.
- SPANGLER, RICHARD C. (Spring 1963), Associate Professor of Economics (on leave)  
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, EDWARD M. (1950), Dean of Educational Services and Summer Sessions  
BS, Iowa State College; MA, PhD, State University of Iowa.
- STAEBLER, ARTHUR E. (1955), Professor of Biology  
BS, MS, PhD, University of Michigan.
- STAMOLIS, GEORGE J. (Spring 1967), Lecturer in Geology  
BS, MS, University of Washington.
- STANDING, KEITH M. (1958), Associate Professor of Biology  
BS, MS, Brigham Young University; PhD, Washington State University.
- STEPHENS, CAROLYNE M. (1966), Assistant Professor of Speech  
BA, MA, EdD, University of California; MEd, University of Virginia.
- STEWART, JOHN O. (1966), Assistant Professor of English  
BA, Los Angeles State College; MA, Stanford University; MFA, State University of Iowa.
- STITTICH, ELEANOR M. (1964), Assistant Professor of Nursing  
BSNE, MLitt., University of Pittsburgh; Registered Nurse.
- STORY, SYDNEY R. (1963), Assistant Professor of Sociology  
BA, MA, PhD, University of California at Los Angeles.
- STRAND, WILSON E. (1967), Assistant Professor of History  
BS, University of Nebraska; MA, Columbia University.
- STRONG, WINSTON C. (1940), Principal Vocational Instructor in Agriculture  
BA, Stanford University; MA, EdD, University of California.
- STUART, MERRILL (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.
- SUNDSTEN, GWEN S. (1967), Field Instructor in Social Work (AgSH)  
BA, MSW, University of Washington.

- SVENSON, KARL A. (1954), Professor of Political Science (on sabbatical leave, spring)  
BA, University of Wyoming; MA, Indiana University; 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.
- TAGLIABUE, MARY P. (1964), Assistant Professor of Foreign Languages  
BA, Rosary College (Illinois); MA, Northwestern University; MA, University of Wisconsin.
- TAKIZAWA, CHIAKI (1964) Field Instructor in Social Work (CDC)  
BS, University of Utah; MSW, University of Illinois.
- TANIGUCHI, IZUMI (1963), Assistant Professor of Economics  
BBA, MBA, University of Houston.
- 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.
- TAYLOR, VERA C. (1965), Assistant Professor of Home Economics  
BS, MS, Iowa State University.
- TEMPLE, BOBBY S. (Spring 1968), Instructor in Journalism  
BA, Fresno State College.
- THOMPSON, GENE L. (1965), Assistant Professor of Art  
BFA, California College of Arts and Crafts; MFA, Cranbrook Academy of Art.
- THOMPSON, SHIRLEY M. (1953), Assistant Professor of Physical Education  
BS, MS, University of Wisconsin.
- THOMSEN, JOHN H. (1967), Assistant Professor of Industrial Arts and Technology  
BA, MA, Fresno State College.
- THOMSON, PATRICIA L. (1967), Assistant 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; Certified Public Accountant.
- 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  
BA, Suffolk University; MA, PhD, American University.
- TOKMAKIAN, HAROLD H. (Spring 1968), Professor of City and Regional Planning; Director of City and Regional Planning Program  
BA, MA, Stanford University; MRP, Cornell University.
- TORRANCE, ESTHER M. (1967), Assistant Professor of Mathematics  
BA, Barnard College of Columbia University; MA, Cornell University; PhD, Brown University.

- TOSCAN, RICHARD E. (1967), Assistant Professor of Speech Arts  
BA, Purdue University; MA, University of Illinois.
- TRIBBEY, BERT A. (1965), Assistant Professor of Biology  
BA, University of California at Santa Barbara; PhD, University of Texas.
- TRUCHAN, MARILYNN J. (1967), Instructor in Music  
BA, MA, University of California at Santa Barbara.
- TUCKER, HAZEL M. (1966), Assistant Professor of Foreign Languages  
BA, University of California at Los Angeles; MA, National University of Mexico.
- TUELLER, DALLAS A. (1946), Academic Vice President; Professor of Political Science  
BA, San Jose State College; PhD, Stanford University.
- UPHOLD, WILLIAM B., JR. (1954), Professor of English and Philosophy  
BA, ThB, Taylor University; BD, Drew University; PhD, University of Southern California.
- VAN ELSWYK, MARINUS, JR. (1957), Senior Vocational Instructor in Agriculture  
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  
BA, MA, Fresno State College.
- VAN VELDHUIZEN, HENRY (1967), Assistant Professor of Social Work  
BA, Calvin College; MSW, Florida State University.
- VAN ZWALENBERG, GEORGE (1963), Assistant Professor of Mathematics (on leave)  
BS, Calvin College (Michigan); MA, University of Florida.
- VARLEY, BARBARA K. (1965), Professor of Social Work; Associate Dean, School 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.
- VORCE, ARMAND E. (Spring 1967), Assistant Professor of Music  
BS, Ithaca College; MS, State University of Iowa.
- WAIBEL, GRACE T. (1963), Librarian II  
BA, College of St. Catherine (Minnesota); MA, George Washington University; MA, University of Minnesota.
- WAKE, WILLIAM H. (1964), Assistant Professor of Geography at Bakersfield Center  
BA, Stanford University; MA, Columbia University; PhD, University of California at Los Angeles.
- WALKER, HAROLD E. (1965), Executive Vice President; Professor of Philosophy  
BA, Whittier College; BD, Hartford Seminary; PhD, University of Edinburgh.
- WALKER, MARGUERITE M. (1959), Associate Professor of Art at Bakersfield Center  
BA, Western Washington College of Education; MA, PhD, University of Washington.

- WALKER, PHILLIP N. (1950), Professor of Speech; Chairman, Speech Arts Department  
BA, MA, University of Washington.
- WALKER, THOMAS L. (1965), Assistant Professor of Speech  
BA, MA, Idaho State University.
- WALTON, WENDEL K. (1963), Assistant Professor of Speech (on leave, fall)  
BA, MA, San Francisco State College.
- WANG, CHENG (1950), Professor of Social Science  
BA, MA, PhD, 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.
- 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  
BS, Culver-Stockton College; MA, University of Missouri.
- WEIHS, FRANK A. (1961, 1965), Assistant Professor of English  
BA, Portland State College; MA, University of Washington.
- WEILER, JOHN H., JR. (1962), Associate Professor of Botany  
BS, University of Nebraska; PhD, University of California.
- WELCH, THOMAS L. (1966), Librarian III  
BA, Sacramento State; MS, University of Illinois.
- WELLS, MABEL G. (1966), Assistant Professor of Social Work  
BA, MSW, Howard University.
- WEST, LORRAINE W. (1957), Associate Professor of Education at Bakersfield Center  
BA, Fresno State College; MA, Stanford University.
- WEST, VIRGINIA C. (1941), Librarian IV  
BA, University of California; BS, MS, University of Southern California.
- 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.
- WIGHT, WILMA F. (1940), Associate Professor of Office Administration  
BA, MA, Stanford University.
- WILCOX, ORLEY W. (1959), Professor of Education; Chairman, Advanced Education Department (spring)  
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, Operation Fair Chance  
BA, University of Redlands; MA, University of California; EdD, Colorado State College.
- WILLIAMS, WESLEY M. (1961), Associate 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), Associate Professor of Speech  
BA, Western Washington College of Education; MA, PhD, University of Southern California.
- WILSON, GORDON (1947), Associate Dean of Students (Activities—Housing)  
BA, Fresno State College; MS, University of Southern California.
- WINTER, JAMES H. (1947), Professor of Music; Assistant Dean, School of Arts and Sciences  
BA, Carleton College; MMus, Northwestern University; PhD, State University of Iowa.
- WOHL, MILTON (1967), Assistant Professor of Linguistics  
BBA, New York City College; MA, University of Michigan.
- WOLFE, JOANNE N. (1967), Assistant Professor of Home Economics  
BS, Rochester Institute of Technology; MS, Michigan State University.
- WOMACK, J PRINTISE (1958), Librarian III  
BA, San Francisco State College; MLS, University of California.
- WOOD, FORREST G. (1963), Assistant Professor of Social Science at Bakersfield Center  
BA, MA, Sacramento State College; PhD, University of California.
- WOODWICK, KEITH H. (1955), Professor of Biology; Chairman, Biology Department  
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, JOHN W. (1929), Professor of Speech  
BA, MA, University of Washington; EdD, University of California.
- ZANE, BURKE (1962), Associate Professor of Mathematics  
BA, Fresno State College; MA, PhD, University of Oregon.
- ZENDER, MICHAEL J. (1966), Assistant Professor of Physics  
BA, St. John's University; PhD, Vanderbilt University.
- ZUMWALT, EUGENE E. (1959), Associate Professor of English (on research-creative leave, spring)  
BA, MA, University of Oregon; PhD, University of California.

## PART-TIME FACULTY, 1967-1968

- ANDREWS, EUGENIA R., Assistant Professor of Management and Marketing  
BS, MBA, Fresno State College.
- BADASCI, HELEN, Assistant in Office Administration  
BS, Fresno State College.
- BALLARD, O. DUANE, JR., Assistant Professor of Physical Education  
BS, MS, Brigham Young University.
- BEECHING, ROBERT B., Assistant Professor of Art  
BA, Fresno State College; MA, Stanford University.
- BERMAN, PETER P., Assistant Professor of Management and Marketing  
BA, San Jose State College; MBA, University of Santa Clara.
- BERRY, ALICE, Instructor in Psychology  
BA, University of San Francisco; MS, San Francisco State College.
- BERTOLDI, ALLEN E., Instructor in Art  
BA, Fresno State College.
- BHATNAGAR, SHASHION, Lecturer in Chemistry  
BS, MS, PhD, Lucknow University.
- BLANTON, MARYALYCE, Instructor in Home Economics  
BA, Fresno State College.
- BLUMBERG, STEPHEN, Assistant Professor of Finance and Industry  
BA, Stanford University; LLB, University of California at Los Angeles.
- BUXMAN, ROBERT S., Lecturer in Plant Science  
BS, Fresno State College.
- CAFFEE, JAMES A., Lecturer in Health Education  
BS, MD, University of California.
- CARTER, BRENDA L., Assistant Professor of Philosophy  
BA, Florida State University.
- CASON, ROGER, Assistant Professor of Accounting and Quantitative Studies  
BBA, MBA, University of Michigan.
- CEHRS, ELIZABETH W., Assistant Professor of Home Economics  
BS, MS, University of Washington.
- CHAPMAN, GUY, Assistant Professor of Advanced Education  
BA, San Jose State College; MA, San Francisco State College; EdD, University of Maryland.
- CLEGG, REED K., Assistant Professor of Criminology and Social Work  
BS, MS, University of Utah; LLB, American Extension School of Law.
- COLE, TERRY W., Instructor in Speech Arts  
BA, Fresno State College.
- COLEMAN, KYLE K., Assistant Professor of Psychology  
BA, University of California; MA, PhD, Louisiana State University.
- COSTA, LUIS F., Assistant in Mathematics  
BA, University of California.
- CULLEN, CLIFT C., Lecturer in Industrial Arts and Technology  
BA, Fresno State College.
- DANIEL, DALE W., Assistant Professor of Accounting  
BA, Fresno State College.

- DeFRIES, WILLIAM A., Associate Professor of Health Education  
BS, MD, St. Louis University.
- DEVELEY, FRED G., Instructor in Physical Education  
BS, MA, George Washington University.
- ELDER, ROBERT E., Instructor in English  
BA, University of Pittsburgh; MA, San Francisco State College.
- EVANS, NYLA J., Instructor in Biology  
BS, Fresno State College.
- FERRER, DONALD J., Instructor in Foreign Language  
BA, Fresno State College.
- FLANNERY, THOMAS P., Assistant Professor of Criminology  
BA, Fresno State College.
- FRENCER, RICHARD P., Lecturer in Plant Science  
BS, California Polytechnic College, Kellogg-Voorhis.
- FRYER, JAMES F., Instructor in Health Science  
BA, MA, Fresno State College.
- FUNG, GIT S., Instructor in Health Science  
BS, University of California; MA, Fresno State College.
- GAAB, DENNIS M., Assistant Professor of Finance and Industry  
BS, MBA, Fresno State College.
- GARCIA, MANUEL R., Instructor in Industrial Arts and Technology  
BA, Fresno State College.
- GAUDIN, RODERICK F., Lecturer in Sociology  
BA, MS, San Jose State College.
- GLIM, MARGARET E., Assistant Professor of Home Economics  
BA, Fresno State College.
- GOMAS, RALPH, Instructor in Art  
BA, Fresno State College.
- GORDON, PAUL A., Assistant Professor of English at Bakersfield Center  
BA, MA, University of California.
- GRAHAM, BERNICE, Instructor in Speech Arts  
BA, State University of Iowa.
- GRAVES, GORDON, Instructor in Psychology  
BA, MA, Fresno State College.
- GREENAWAY, ROY F., Instructor in English  
BA, University of Chicago; MA, Fresno State College.
- GREER, TED G., Instructor in Art  
BA, Fresno State College.
- GREULICH, BERNARD J., Lecturer in Engineering  
BS, University of Utah.
- GUAGLIANONE, SAVERIO L., Instructor in Industrial Arts and Technology  
BA, Fresno State College.
- HAHESY, JEFFERSON E., Assistant Professor of Philosophy  
BA, Fresno State College; LLB, Harvard Law School.
- HAM, CECELIA, Assistant Professor of Elementary Education  
BA, Fresno State College.
- HANSEN, THOR N., Assistant in Biology  
BA, Fresno State College.

- HARRELL, JAMES E., Assistant in Foreign Languages  
BA, Fresno State College.
- HERNANDEZ, JOHN P., Assistant Professor of English at Bakersfield College  
BA, MA, University of Michigan.
- HEWLETT, THOMAS H., Lecturer in Biology  
MD, University of Louisville School of Medicine; MA, University of Pennsylvania.
- HIATT, JOHN R., Assistant Professor of Education  
BA, MA, Colorado State College.
- HOLDER, ELAINE E., Assistant Professor of Psychology  
BA, University of Colorado; MA, New Mexico State University; PhD, University of Missouri.
- HOPPER, PATRICIA, Instructor in Art  
BA, University of California.
- HOY, MARJORIE ANN, Instructor in Biology  
BA, University of Kansas; MS, University of California.
- HUBBART, DOUGLAS R., Instructor in Political Science  
BA, Fresno State College.
- ISAAK, DANIEL, Assistant Professor of Biology  
BA, Tabor College (Kansas); MA, PhD, University of Minnesota.
- ISHIMOTO, TOSHIO T., Lecturer in Plant Science  
BA, MA, Fresno State College; PhD, Oregon State University.
- JENSEN, GERTRUDE, Assistant in Mathematics  
BA, Fresno State College.
- JOHNSON, ALBERT R., Lecturer in Agricultural Mechanics  
BS, University of Massachusetts.
- JONES, CHARLES W., Assistant Professor of Music at Bakersfield Center  
BMus, MMus, University of Redlands.
- KADY, NASSER T., Instructor in Industrial Arts and Technology  
BA, Fresno State College.
- KALLENBERG, RUTH A. (1965), Librarian II  
BA, Whitman College; MA, Indiana University.
- KEHLENBECK, GEORGE A., Assistant Professor of Management  
BA, University of Utah; MS, Fresno State College.
- KELLAS, ESTHER V., Instructor in English  
BA, MS, Fresno State College.
- KELLY, WILLIAM W., Lecturer in Animal Science  
BS, Fresno State College.
- KEVORKIAN, HUGO, Lecturer in Engineering  
BS, Fresno State College.
- KHATRI, MULCHAND R., Instructor in Chemistry  
BS, MS, National College of Bombay.
- KILBURN, KENT L., Assistant Professor of Criminology  
BA, University of California; MS, Fresno State College; EdD, Utah State University.
- KIMMONS, GERALD, Instructor in Industrial Arts and Technology  
BA, Fresno State College.
- KOLIGIAN, ALICE L., Instructor in Chemistry  
BA, Fresno State College.

- KUSEL, ANITA D., Assistant Professor of Foreign Language  
BA, McGill University; MA, Columbia University.
- LARRABEE, CARLTON H., Professor of English  
BA, Clark University; MA, Harvard University; EdD, New York University.
- LARSEN, LELAND M., Lecturer in Agriculture  
BS, Fresno State College; MS, PhD, Oregon State University.
- LATHAM, SEYMOUR, Lecturer in Sociology  
BA, Miami University; MA, EdD, Columbia University.
- LEAVENWORTH, ANN, Assistant Professor of History  
BA, Swarthmore College; MA, University of California; PhD, University of Colorado.
- LECOUNT, ADNA M., Assistant Professor of Education  
BS, University of California; MA, EdD, Teachers College, Columbia University.
- LEMONS, BONNIE, Assistant Professor of Education  
BEd, University of California at Los Angeles.
- LEVY, PAUL, Lecturer in Social Work  
MD, University of Illinois Medical College.
- LEWIS, SHELDON, Associate Professor of Accounting and Quantitative Studies  
BA, Fresno State College; MBA, Harvard Graduate School.
- LOCKFORD, JOYCE C., Assistant Professor of English  
BA, University of California; MA, University of Utah.
- LUBIC, ALAN E, Lecturer in History  
BA, MA, Fresno State College.
- MALKANI, MOTI C., Assistant in Mathematics  
BS, Jai Hind College (India); MS, University of Bombay.
- MANNING, JOHN CRAIGE, Professor of Geology at Bakersfield Center  
BS, University of Idaho; PhD, Stanford University.
- MARKLEY, RICHARD C., Instructor in Linguistics  
BA, Fresno State College.
- MATTHEW, E. ROSALIE, Lecturer in History  
BA, Fresno State College.
- McCOON, BETTY J., Lecturer in Art
- McINTIRE, HAROLD D., Assistant in Mathematics  
BA, Fresno State College.
- McKINNEY, HAROLD C., Instructor in Criminology
- MINCY, JOSEPH E., Assistant Professor of Industrial Arts and Technology  
BA, MA, Fresno State College.
- MOORE, PATRICIA A., Instructor in Art
- MORTENSON, HELEN R., Assistant Professor of Health Education  
BS, Colorado Agricultural and Mechanical College; MPH, University of California.
- MORTLAND, WILLIAM J., JR., Assistant Professor of Criminology  
BA, Fresno State College.
- MUELLER, LARRY, Assistant in Music
- MURRAY, RICHARD A., Instructor in Physical Education  
BA, Fresno State College; MS, Arizona State University.
- NANEY, MICHAEL T., Assistant in Geology

- NICKEL, THEODORE W., Assistant in Psychology  
BA, Tabor College.
- NIELSEN, ROBERT W., Assistant Professor of Music  
BA, MA, Fresno State College.
- ODORFER, ADOLPH, Associate Professor of Art  
BA, Fresno State College.
- OLLIKKALA, GEORGE, Assistant Professor of Art  
BA, BLS, University of California.
- ORR, JACK P., Lecturer in Plant Science  
BS, California State Polytechnic College.
- OSTRANDER, HOWARD W., Assistant Professor of Engineering  
CE, Cornell University.
- OWENSBY, LOLA B., Assistant Professor of Physical Education  
BA, Fresno State College; MS, University of Wisconsin.
- PATNAUDE, WILLIAM E., Instructor in Art  
BA, University of California.
- PEAL, EDITHIE V., Assistant Professor of Foreign Languages  
BA, University of California; MA, University of Pacific.
- PEARSON, JACK E., Junior Vocational Instructor in Agriculture  
BS, Fresno State College.
- PERROTT, CHARLES, Lecturer in Education  
BA, Iowa State College; MA, Columbia University.
- PETROSINO, ANTONIO, Instructor in Foreign Languages  
BA, Fresno State College.
- PHILLIPS, HUBERT, Professor of History  
BA, University of Chattanooga; MA, PhD, Columbia University.
- PICKEL, ROBERT J., Assistant Professor of Finance and Industry  
BA, LLB, University of Denver.
- POTTER, KENNETH A., Lecturer in Finance and Industry  
BA, University of Michigan; MA, PhD, University of California.
- PROUDIAN, JOHN P., Lecturer in Foreign Language  
MA, Fresno State College.
- READ, GEORGE, Assistant in Geography  
BA, Fresno State College.
- REEDER, CHARLOTTE P., Lecturer in Economics  
BA, MA, University of Illinois.
- REICH, JOSEPH A., Instructor in Health Education  
BA, MA, Fresno State College.
- RENZI, CLEMENT J., Lecturer in Art  
BS, University of California.
- RENZI, DOROTHY, Instructor in Music  
BA, Mills College.
- RIPOL, ANDRES, Assistant in Foreign Languages  
BA, University of New Mexico.
- ROBINSON, BILLY E., Assistant Professor of Music  
BA, MA, Fresno State College.
- ROGERS, WANDA J., Assistant in Mathematics  
BS, Fresno State College.

- ROSANDER, GERALD A., Assistant Professor of Education  
BA, MA, Fresno State College; EdD, University of Southern California.
- SANDERS, RONALD J., Lecturer in Animal Science  
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