



**ARIZONA STATE  
COLLEGE TEMPE**

*"In the valley of the sun"*



**BULLETIN  
CATALOG ISSUE**

**VOLUME LXXII NUMBER 2 APRIL, 1957**

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# CALENDAR OF THE YEARS

1957-1958

1958-1959

1957	1958		1959
<b>JULY</b>	<b>JANUARY</b>	<b>JULY</b>	<b>JANUARY</b>
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<b>AUGUST</b>	<b>FEBRUARY</b>	<b>AUGUST</b>	<b>FEBRUARY</b>
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<b>SEPTEMBER</b>	<b>MARCH</b>	<b>SEPTEMBER</b>	<b>MARCH</b>
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<b>OCTOBER</b>	<b>APRIL</b>	<b>OCTOBER</b>	<b>APRIL</b>
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<b>NOVEMBER</b>	<b>MAY</b>	<b>NOVEMBER</b>	<b>MAY</b>
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<b>DECEMBER</b>	<b>JUNE</b>	<b>DECEMBER</b>	<b>JUNE</b>
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# Arizona State College Bulletin

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Vol. LXXII

April, 1957

No. 2

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## Arizona State College

Grady Gammage, Ed.D., LL.D.  
President of the College

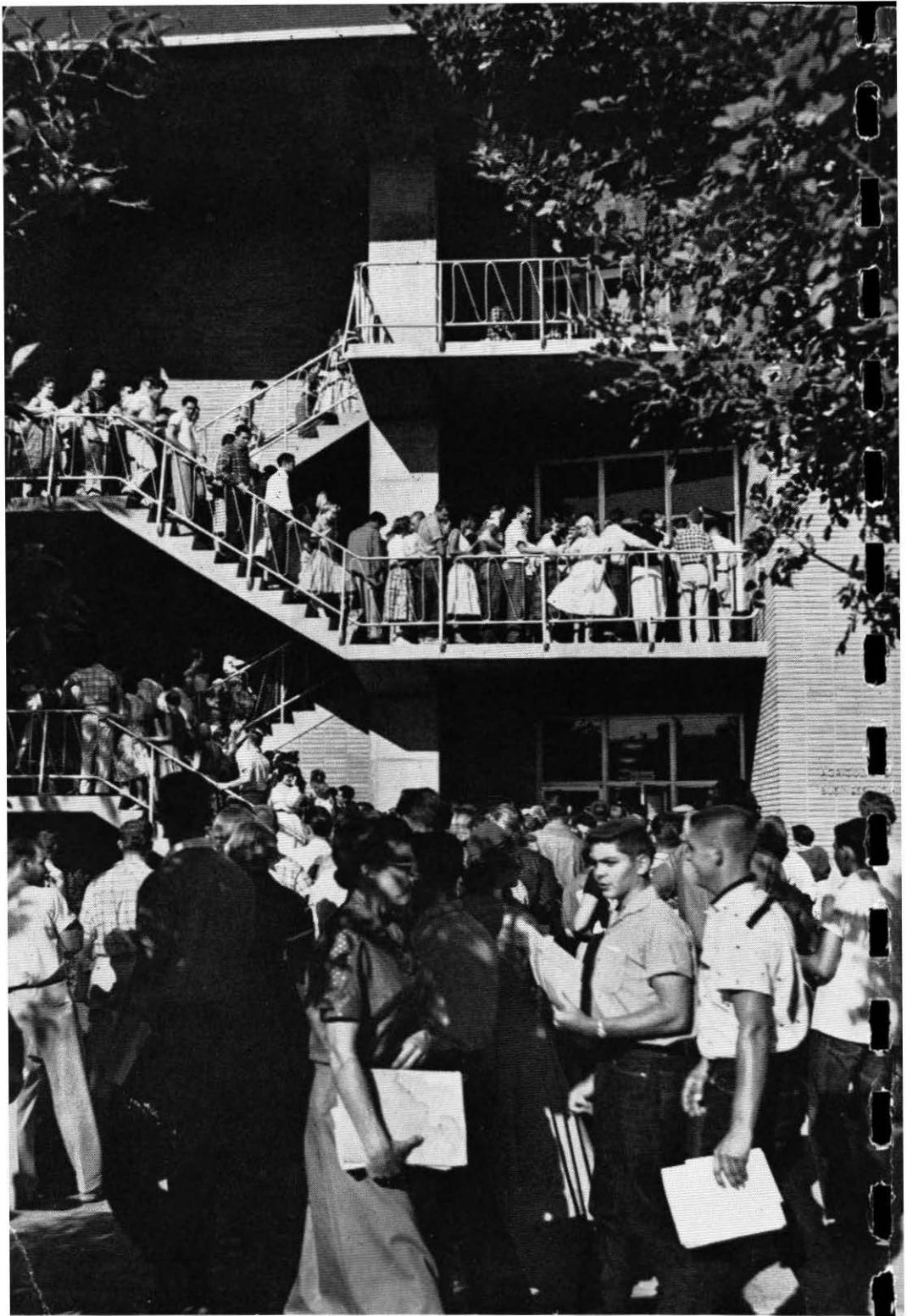
Harold D. Richardson, Ph.D.  
Academic Vice President

Gilbert L. Cady, B.A. in Ed.  
Vice President for Business Affairs

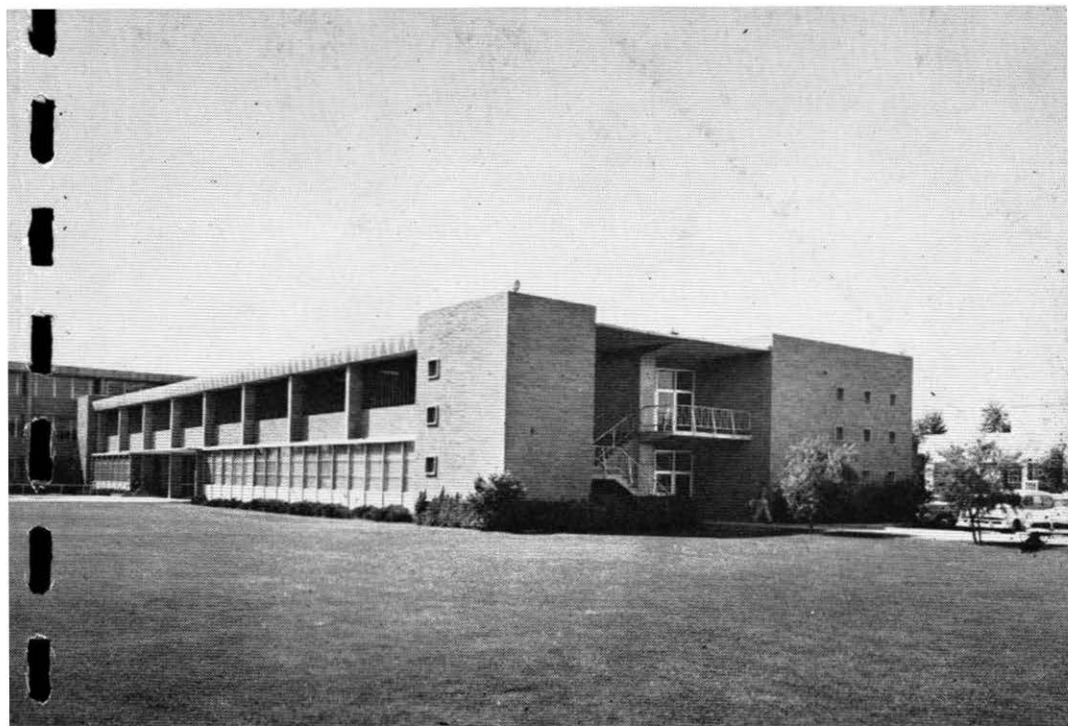


TEMPE, ARIZONA

Published four times a year during the months of January, March, May and July, and entered as second class matter November 30, 1931 in the Post Office at Tempe, Arizona, under the Act of August 24, 1912.



**Registration day . . . probably the busiest day of the year on campus as students scurry to complete programming and registration procedures.**



The Administration building, recently completed, reflects the modern architectural plan at Arizona State. This building houses most of the administration offices including that of the Registrar.

The magnificent new Memorial Union, center of student life on campus, was dedicated and opened February, 1956. In addition to the Cafeteria, the Union houses the bookstore, offices of student government, publications, and the beautiful Ballroom and starlight terrace.

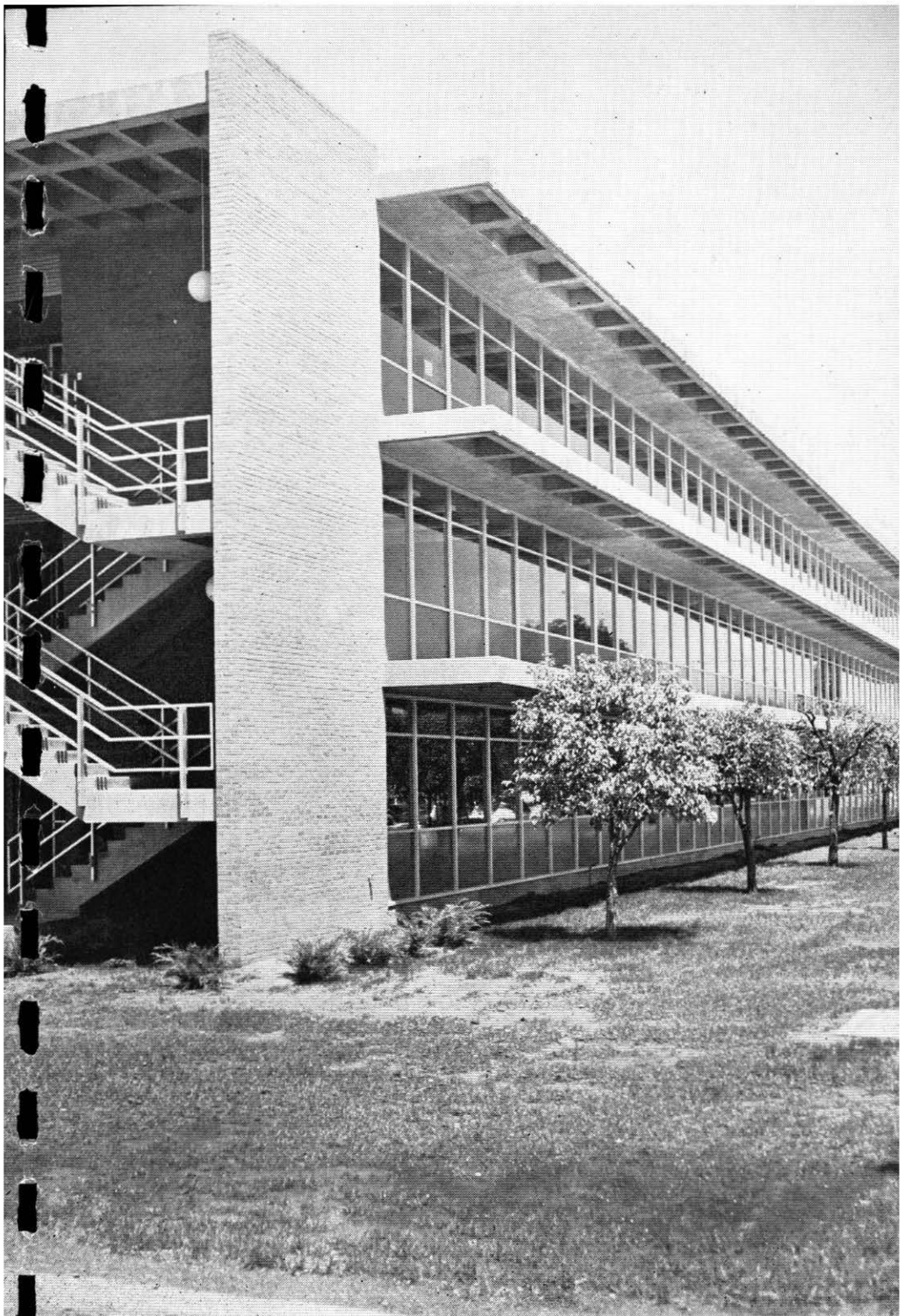




One of the largest and most complete libraries in the Southwest, Matthews Library, in addition to hundreds of thousands of books, provides research rooms and facilities. The Collection of American Art is on permanent exhibition throughout the building.

A "between-class" break as students leave the Science building. The solar furnace, one of the largest in the U. S., can be seen on the roof of the building.



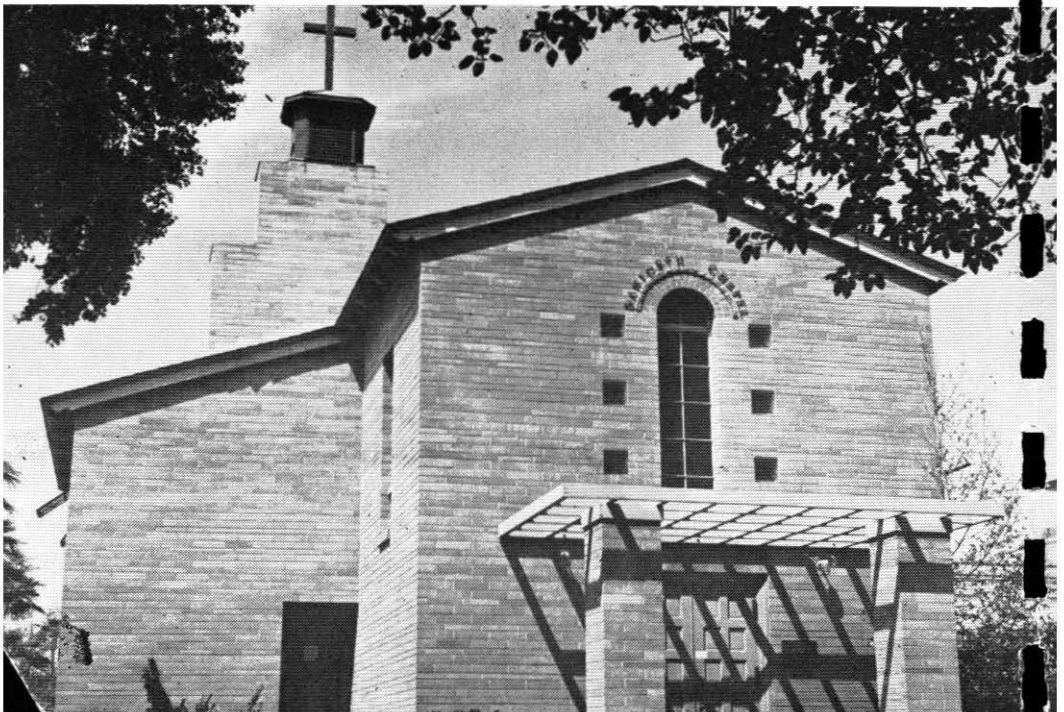


The Engineering and Technology Center. Too large to be shown in its entirety, this three-story unit houses offices and classrooms for engineering and electronics courses. Three integrated wings, one housing the two million dollar electronic computer, extend to the north.

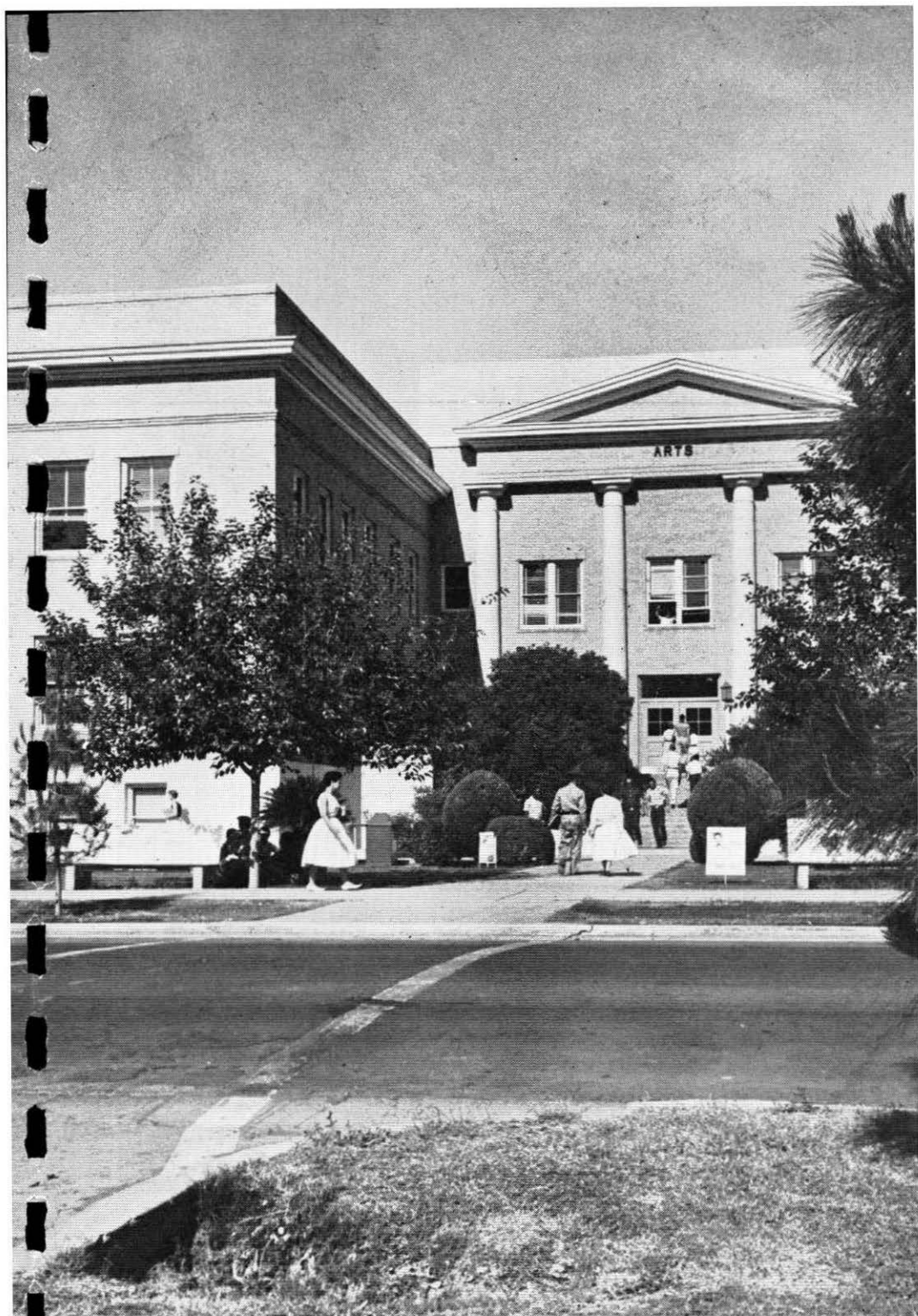


**The infirmary houses offices of the student health center and the dispensary. Infirmary care by the qualified staff is available to all regularly registered students.**

**In the heart of the campus and in the heart of the students, Danforth Chapel is open at all times for meditation to all students regardless of race, creed, or color.**





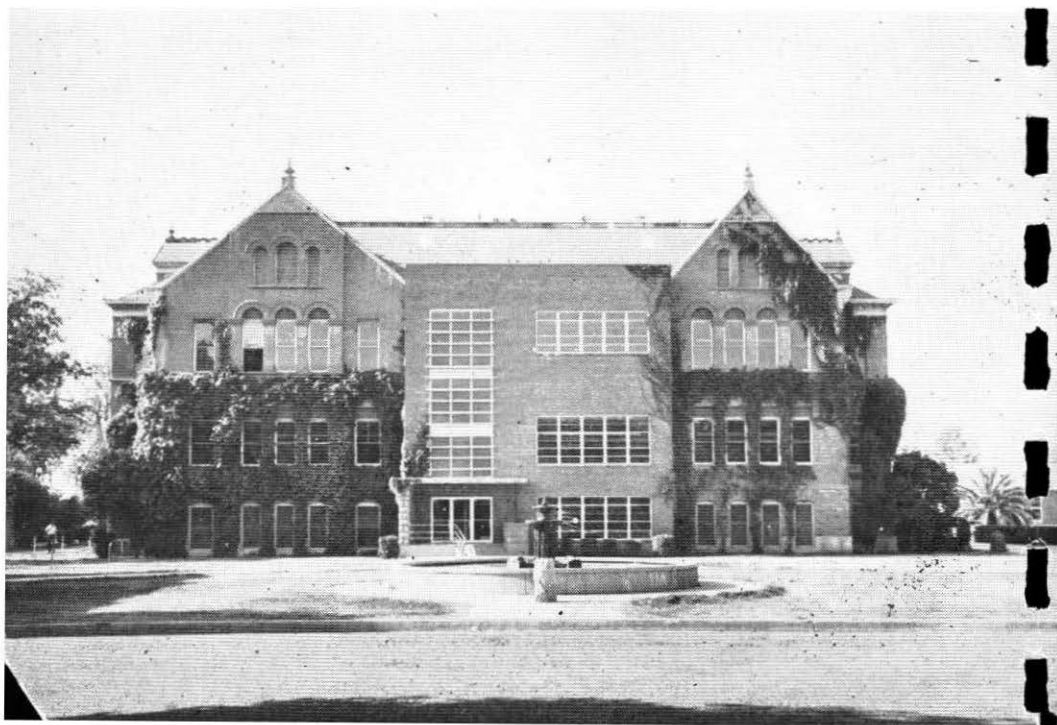


One of the more imposing structures on campus the Arts building, providing class rooms and studios for art, music, and social studies, was recently remodeled to provide better facilities in these humanities subjects.



The Men's gym, combining the old structure with a new building recently opened, adjoins the Memorial Union and provides offices and complete facilities for the physical education department. Offices of the R.O.T.C. are in this building.

Although recently completely modernized inside including air conditioning, Old Main reflects the charm of yesterday on the campus. It is one of the oldest structures in continuous use and today houses humanities subjects and the College of Education.



*General Catalog*  
*for*

*1957-58*

*1958-59*

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ARIZONA STATE  
COLLEGE at TEMPE

Requests for detailed information should be addressed  
as follows:

Registrar and Director of Admissions  
Arizona State College  
Tempe, Arizona

# Table of Contents

COLLEGE CALENDAR .....	6
CAMPUS MAP .....	361
ARIZONA STATE COLLEGE AT TEMPE .....	8
BOARD OF REGENTS .....	9
COLLEGE STAFF	
Administration .....	10
Instruction .....	11
Affiliated Faculty .....	24
Training School .....	27
Matthews Library .....	27
Assistants in Administration .....	28
Assistants in Maintenance .....	30
THE COLLEGE	
Organization .....	31
History .....	31
Purposes .....	33
Recognition by Accrediting Agencies .....	34
The College Setting .....	34
College Buildings .....	36
ENTRANCE INFORMATION	
Admission to College .....	44
General Requirements .....	44
High School Graduates .....	45
Conditional Admission .....	45
Non-Graduates of High Schools .....	46
Special Information for Veterans .....	46
Admission with Advanced Standing .....	47
Admission to Summer Session .....	48
Registration .....	48
FINANCIAL ASSISTANCE AND AWARDS	
Scholarships and Fellowships .....	54
Loan Funds .....	64
Honors and Awards .....	65
COLLEGE REGULATIONS	
Conduct of Students .....	72
Attendance .....	73
Fees, Deposits and Expenses .....	74
Marking System .....	78
Air Science .....	80
Military Science and Tactics .....	82
General Education .....	84
Graduation Requirements .....	87
COLLEGE SERVICES	
College Guidance Program .....	90
Housing .....	91
Health Service .....	94
Placement Center .....	95
Alumni Association .....	95

## STUDENT AFFAIRS

Student Government .....	97
Student Organizations .....	98
Honorary Groups .....	98
Special Interest Groups .....	99
Religious Groups .....	100
Sororities and Fraternities .....	100
Special Group Activities .....	101
Musical Activities .....	101
Physical Education and Recreation Activities .....	101
Speech and Dramatics .....	102
Radio and Television .....	102
Student Publications .....	103

## COLLEGE OF LIBERAL ARTS

Purpose .....	104
Organization .....	104
Degrees .....	105
Bachelor of Arts Degree Curriculum .....	106
Bachelor of Science Degree Curriculum .....	121
Special Programs .....	131
Pre-Optometry .....	131
Pre-Pharmacy .....	132
Pre-Ministerial .....	132
Pre-Law .....	133
Pre-Dental, Pre-Medical, and Pre-Osteopathy .....	134
Pre-Social Work .....	135
Latin-American Area Studies .....	136
Public Service Training Program .....	137
Foreign Service Training Program .....	138
Medical Technology .....	139
School of Nursing .....	140
Bachelor of Science in Nursing Curriculum .....	140

## COLLEGE OF EDUCATION

Purpose .....	142
Organization .....	142
Degrees .....	142
Certification .....	143
Directed Teaching .....	144
Bachelor of Arts in Education Degree Curriculums .....	146

## COLLEGE OF BUSINESS ADMINISTRATION

Purpose .....	162
Organization .....	162
Degrees .....	162
Bachelor of Science Degree Curriculum in Business Administration .....	163
Pre-Law Curriculum .....	175
Special Secretarial Program .....	176

## COLLEGE OF APPLIED ARTS AND SCIENCES

Purposes .....	178
Organization .....	178
Division of Agriculture .....	180
Bachelor of Science Degree Curriculum in Agriculture .....	181
Special Programs .....	182
Agriculture Education .....	182
Pre-Veterinary and Pre-Forestry .....	182
Division of Architecture .....	184
Bachelor of Science Degree Curriculum in Architecture .....	185
Bachelor of Science Degree Curriculum in Construction .....	187
Special Programs .....	188
Architecture and Construction .....	188

Division of Engineering .....	188
Bachelor of Science Degree Curriculum in Engineering .....	190
Chemical Engineering .....	192
Civil Engineering .....	193
Computer Engineering .....	193
Electrical Engineering .....	194
Engineering Science .....	194
Industrial Engineering .....	195
Mechanical Engineering .....	195
Nuclear Engineering .....	195
Division of Technology .....	196
Bachelor of Science Degree Curriculum in Technology .....	198
GRADUATE DIVISION .....	204
SUMMER SESSION .....	211
EXTENSION DIVISION .....	212
COURSES OF INSTRUCTION	
Agriculture .....	216
Air Science .....	223
Architecture .....	224
Art .....	229
Botany .....	234
Business Administration .....	236
Chemistry .....	249
Education .....	253
Engineering .....	267
English .....	276
Foreign Languages .....	280
Geography .....	284
Geology .....	286
Health, Physical Education, and Recreation .....	288
History and Political Science .....	294
Home Economics .....	299
Humanities .....	302
Library Science .....	303
Mass Communications .....	305
Mathematics .....	307
Military Science and Tactics .....	311
Music .....	312
Physics and Astronomy .....	319
Psychology and Philosophy .....	323
Sociology and Anthropology .....	329
Speech and Drama .....	331
Technology .....	333
Zoology .....	341
STATISTICS	
Summary of Registration, 1954-55—1955-56 .....	347
Summary of Graduates, 1954-55—1955-56 .....	349
GIFTS AND BEQUESTS .....	352

# College Calendar

1957-58 1958-59

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## Fall Semester

	1957-58	1958-59
Faculty Planning Conference.....	Sept. 6, F.	Sept. 5, F.
Residence Halls and Dining Hall Open .....	Sept. 8, Su.	Sept. 7, Su.
First Freshman Assembly.....	Sept. 9, M., 8:30 a.m.	Sept. 8, M., 8:30 a.m.
Orientation and Guidance for Freshmen .....	Sept. 9, 10, 11, M., Tu., W.	Sept. 8, 9, 10, M., Tu., W.
(All Freshmen are expected to be in attendance on these days for the special orientation programs, aptitude tests, and physical examinations.)		
Freshman Students Will Complete Registration and Pay Fees.....	Sept. 13, F., to Noon Sa., Sept. 14	Sept. 12, F., to Noon Sa., Sept. 13
Sophomores, Juniors, Seniors, and Graduates Receive Registration Materials and Complete Regis- tration .....	Sept. 12, 13 to Noon Sa., Sept. 14	Sept. 11, 12 to Noon Sa., Sept. 13
Instruction Begins.....	Sept. 16, M.	Sept. 15, M.
Last Day of Registration for Credit.....	Sept. 23, M., 4:00 p.m.	Sept. 22, M. 4:00 p.m.
Mid-Semester Scholarship Reports Due .....	Nov. 7, Th., 4:00 p.m.	Nov. 6, Th., 4:00 p.m.
Veterans Day, No Classes.....	Nov. 11, M.	Nov. 11, Tu.
Candidates for Bachelor's Degrees Must File Application for Graduation by.....	Nov. 15, F.	Nov. 15, Sa.
Thanksgiving Recess.....	Nov. 27, W., 10:00 p.m. to Dec. 2, M., 8:00 a.m.	Nov. 26, W., 10:00 p.m. to Dec. 1, M., 8:00 a.m.
Christmas Vacation.....	Dec. 21, Sa., 12:00 Noon to Jan. 6, M., 8:00 a.m.	Dec. 20, Sa. 12:00 Noon to Jan. 5, M., 8:00 a.m.
Final Examinations.....	Jan. 17, 20, 21, 22, 23, F., M., Tu., W., Th.	Jan. 16, 19, 20, 21, 22, F., M., Tu., W., Th.
First Semester Grade Reports Due.....	Jan. 24, F., 4:30 p.m.	Jan. 23, F., 4:30 p.m.



## Spring Semester

Residence Halls Open to New Students .....	Jan. 26, Su.	Jan. 25, Su.
New Freshmen and Transfer Students take Aptitude Examinations.....	Jan. 27, M.	Jan. 26, M.
Registration Days..... (All students will complete registration and pay fees.)	Jan. 28, 29 Tu., W.	Jan. 27, 28 Tu., W.
Instruction Begins Second Semester.....	Jan. 30, Th.	Jan. 29, Th.
Last Day of Registration for Credit.....	Feb. 6, Th.	Feb. 5, Th.
Washington's Birthday, No Classes.....	Feb. 22, Sa.	Feb. 22, Su. (23, M.)
Mid-Semester Scholarship Reports Due .....	Mar. 18, Tu., 4:00 p.m.	Mar. 17, Tu., 4:00 p.m.
Easter Vacation.....	April 3, Th., 10:00 p.m. to April 14, M., 8:00 a.m.	Mar. 26, Th., 10:00 p.m. to April 6, M., 8:00 a.m.
Scholarship Reports Due for all Students Completing Requirements for Degrees.....	May 19, M., Noon	May 18, M., Noon
Commencement Rehearsal..... (Goodwin Stadium)	May 23, F., 8:00 a.m.	May 22, F., 8:00 a.m.
Honors Assembly.....	May 23, F., 10:30 a.m.	May 22, F., 10:30 a.m.
R.O.T.C. Honors Ceremony and Parade.....	May 23, F., 8:00 p.m.	May 22, F., 8:00 p.m.
Baccalaureate Service.....	May 25, Su., 8:00 p.m.	May 24, Su., 8:00 p.m.
Commencement Exercises.....	May 27, Tu., 8:00 p.m.	May 26, Tu., 8:00 p.m.
Final Examinations.....	May 26, 27, 28, 29, 30, M., Tu., W., Th., F.	May 25, 26, 27, 28, 29, M., Tu., W., Th., F.
Residence Halls Closed.....	May 31, Sa. 12:00 Noon	May 30, Sa., 12:00 Noon
Second Semester Grade Reports Due.....	June 2, M., Noon	June 1, M., Noon

## Summer Session

First Summer Session Begins, Registration .....	June 9, M.	June 8, M.
First Summer Session Ends.....	July 12, Sa.	July 11, Sa.
Second Summer Session Begins, Registration .....	July 14, M.	July 13, M.
Second Summer Session Ends.....	Aug. 16, Sa.	Aug. 15, Sa.

# ARIZONA STATE COLLEGE AT TEMPE

## COLLEGE OF LIBERAL ARTS

Division of Behavioral and Social Sciences: Departments of History and Political Science; Psychology and Philosophy; Sociology and Anthropology.

Division of Health, Physical Education, and Recreation: Departments of Air Science; Intercollegiate Athletics; Health, Physical Education, and Recreation; Military Science and Tactics.

Division of Home Economics: Department of Home Economics.

Division of Fine Arts: Departments of Art; Music.

Division of Language and Literature: Departments of English; Foreign Languages; Humanities; Mass Communications; Speech and Drama.

Division of Life Sciences: Departments of Botany; Zoology.

Division of Physical Sciences: Departments of Chemistry; Geography; Geology; Mathematics; Physics and Astronomy.

School of Nursing

## COLLEGE OF EDUCATION

Department of Education

Department of Library Science

## COLLEGE OF BUSINESS ADMINISTRATION

Department of Business Administration

## COLLEGE OF APPLIED ARTS AND SCIENCES

Division of Agriculture

Division of Architecture

Division of Engineering

Division of Technology

## GRADUATE DIVISION

## SUMMER SESSION

## EXTENSION DIVISION

Board of Regents  
of  
The University and State Colleges  
of Arizona

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Ex-Officio

ERNEST W. MCFARLAND, B.A., M.A., J.D., LL.D...Governor of Arizona  
M. L. BROOKS, B.S., M.A. in Ed., Assistant Treasurer.....  
.....State Superintendent of Public Instruction

Appointed

	TERM EXPIRES
JOHN M. JACOBS, President.....	January, 1959
EVELYN J. KIRMSE, A.M., Treasurer.....	January, 1959
ALEX G. JACOME, B.S., Assistant Secretary.....	January, 1961
WILLIAM R. MATHEWS, A.B.....	January, 1961
LYNN M. LANEY, B.S., J.D., Secretary.....	January, 1963
SAM H. MORRIS, A.B., J.D., LL.D.....	January, 1963
JOHN G. BABBITT, B.S.....	January, 1965
ELWOOD W. BRADFORD, B.S.-B.A.....	January, 1965

---

JAMES BYRON McCORMICK, LL.B., LL.M., S.J.D., LL.D.....  
.....Adviser to the Board  
MYRON R. HOLBERT, A.B., M.A.....Budget Officer for Board  
ALVRED B. NETTLETON, M.S., C.P.A.....General Examiner for Board

# The College Staff

## Administration

- GRADY GAMMAGE (1933)†.....President of the College  
B.A., M.A., LL.D., University of Arizona; Ed.D., New York University; Litt.D., Southwest Christian Seminary
- HAROLD D. RICHARDSON (1940).....Academic Vice President;  
Chairman, Division of Instruction; Professor of Education  
Ph.B., Ph.M., University of Wisconsin; Ph.D., Northwestern University
- GILBERT L. CADY (1934).....Vice President for Business Affairs;  
Chairman, Division of Business Management  
B.A. in Ed., Arizona State College at Tempe
- IRVING W. STOUT (1953).....Director of Graduate Study;  
Professor of Education  
B.Ed., Platteville State Teachers College;  
M.A., Ed.D., Northwestern University
- ARNOLD TILDEN (1937).....Dean, College of Liberal Arts;  
Professor of History  
B.A., M.A., DePauw University; Ph.D., University of Southern California
- G. D. McGRATH (1950).....Dean, College of Education;  
Professor of Education  
A.B., Findlay College; M.A., University of Michigan;  
Ph.D., University of Colorado
- GLENN D. OVERMAN (1956).....Dean, College of Business  
Administration; Professor of Business Administration  
B.S., Central State College; M.S., Oklahoma Agricultural and  
Mechanical College; D.B.A., Indiana University
- LEE P. THOMPSON (1955).....Dean, College of Applied Arts and  
Sciences; Head, Division of Engineering;  
Professor of Engineering  
B.A., Indiana University; M.S., Ph.D., Agricultural and  
Mechanical College of Texas; Registered Engineer in Texas
- E. LORETTA ANDERSON (1957).....Director, School of Nursing;  
Associate Professor of Nursing  
R.N., Michael Reese Hospital School of Nursing; P.H.M., B.S.,  
University of Minnesota; M.S., Cornell University
- ROY C. RICE (1946).....Director of Summer Session, Extension  
and Correspondence; Professor of Education  
B.S., New Mexico University; M.S., Massachusetts State  
College; Ph.D., University of Texas
- W. P. SHOFSTALL (1950).....Dean of Students;  
Chairman, Division of Student Affairs  
B.S. in Ed., Northeast Missouri State Teachers College;  
M.A., Ph.D., University of Missouri
- CATHERINE G. NICHOLS (1952).....Associate Dean of Students;  
A.B., M.A., University of Kentucky; Ed.D., Teachers College,  
Columbia University
- JOSEPH E. SPRING (1954).....Chief, News Bureau  
A.B., Illinois Wesleyan University; M.A., Ph.D., University of Denver
- HAROLD W. BATCHELOR (1943).....Head Librarian;  
Chairman, Department of Library Science;  
Professor of Library Science  
B.A., University of Oregon; B.S. in L.S., M.S. in L.S.,  
University of Illinois
- ALFRED THOMAS, JR. (1939).....Registrar and Director of Admissions  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- #ROBERT F. MENKE (1947).....Director of Placement Center;  
Professor of Education  
B.S., Oshkosh State College; M.A., Ph.D., Northwestern University

†Year of first appointment to the faculty.

#On Leave, First Semester, 1957-58.

- TILMAN T. CRANCE (1941).....Comptroller  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe;  
C.P.A., Arizona
- GEORGE A. BOYD (1955).....Coordinator of Research and  
Assistant in Special Services  
A.B., M.A., Austin College; M.S., University of Iowa
- JAMES W. CREASMAN (1947).....Alumni Secretary  
A.B. in Ed., Arizona State College at Tempe
- CLYDE B. SMITH (1952).....Director, Department of Intercollegiate  
Athletics; Head, Division of Health, Physical  
Education and Recreation; Associate Professor  
of Physical Education  
A.B., Geneva College; M.S. in Ed., Indiana University

## Instruction

- GAMMAGE, GRADY (1933) - - - - - President of the College  
B.A., M.A., LL.D., University of Arizona; Ed.D., New York  
University; Litt.D., Southwest Christian Seminary
- ABBOTT, JOHN C. (1956) - - - Assistant Professor of Education  
B.S., M.S., Ed.D., Indiana University
- ABRAHAM, WILLARD (1953) - - - - - Professor of Education  
B.S., Illinois Institute of Technology (Lewis Institute); M.Ed.,  
Chicago Teachers College; Ph.D., Northwestern University
- ALBRIGHT, ROBERT W. (1957) - - - Associate Professor of Speech;  
Chairman, Department of Speech and Drama  
B.A., University of Washington; M.A., Gonzaga University;  
Ph.D., Stanford University
- ALISKY, MARVIN H. (1957).....Associate Professor of Mass  
Communications; Chairman, Department of  
Mass Communications  
B.A., M.S., Ph.D., University of Texas
- ANDERSON, E. LORETTA (1957) - Associate Professor of Nursing;  
Director, School of Nursing  
R.N., Michael Reese Hospital School of Nursing; P.H.N., B.S.,  
University of Minnesota; M.S., Cornell University
- ANDERSON, MARGERY M. (1949) - Assistant Professor of Education  
B.A., Yankton College; M.A., University of Chicago
- ASHE, ROBERT W. (1955) - - - - - Professor of Education  
B.A., M.A., Arizona State College at Tempe; Ed.D., University  
of Southern California
- AUSTIN, GLENN (1950) - - - - - Professor of Education  
B.A., M.A., University of Kansas; Ph.D., Ohio State University
- AUTENRIETH, BERTHA H. (1946) - - Assistant Professor of Music  
B.M., New England Conservatory; M.M., University of Michigan
- BAKER, ROBERT L. (1955) - - Assistant Professor of Education  
B.S. in Ed., M.A., Ph.D., University of Nebraska
- BAKER, VIRGIL R. (1955) - - - Assistant Professor of Geology  
B.S., M.S., University of Nebraska; Ph.D., University of Utah
- BALL, RACHEL STUTSMAN (1947) - - - Associate Professor of  
Psychology  
A.B., University of Missouri; Ph.D., University of Chicago
- BARDRICK, RICHARD A. (1956) - Assistant Professor of Psychology  
A.B., Ph.D., University of California at Los Angeles
- BARKLEY, BESS J. (1933) - - - Associate Professor of Music  
B.A., University of Arizona
- BARNES, JOHN B. (1957) - - - Associate Professor of Education;  
Director, Bureau of Educational Research and Services  
B.A., M.A., University of Denver; Ph.D., University of Wyoming
- BAROODY, WILSON G. (1957) - - - Instructor in English  
A.B., Grand Canyon College; A.M., University of Arizona

- BARRETT, THOMAS W. (1950) - - - - - Professor of Agronomy  
B.S., Brigham Young University; M.S., Ph.D., Cornell University
- BATCHELOR, HAROLD W. (1943) - - Professor of Library Science;  
Chairman, Department of Library Science; Head Librarian  
B.A., University of Oregon; B.S. in L.S., M.S. in L.S.,  
University of Illinois
- BATEMAN, GEORGE M. (1927) - - - - - Professor of Chemistry;  
Head, Division of Physical Sciences;  
Chairman, Department of Chemistry  
B.S., Utah State Agricultural College; M.S., Ph.D., Cornell University
- BATTS, JEANNE H. (1956) - - - - - Instructor in Biology  
B.A., M.A., Texas Technological College
- BEAKLEY, GEORGE C. (1956) - - - - - Professor of Engineering  
B.S. in M.E., Texas Technological College; M.S. in M.E., University  
of Texas; Ph.D., Oklahoma Agricultural and Mechanical Arts College
- BEALS, ARTHUR R. (1951) - - Assistant Professor of Accounting  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe;  
C.P.A., Arizona
- BEAMER, WILLIAM E., CAPTAIN (1956) - - Assistant Professor of  
Military Science and Tactics  
B.S., Virginia Polytechnic Institute
- BECKER, W. G. (1955) - - - - Associate Professor of Finance  
A.B., M.A., Loyola University, Chicago; Ph.D., State University of Iowa
- BELL, RICHARD H. (1952) - - - Assistant Professor of Education;  
Director of Radio-TV Bureau  
B.A., Miami University; M.A., Teachers College, Columbia University
- BENDER, GORDON L. (1953) - - - Associate Professor of Zoology  
B.S., Iowa State College; M.S., University of Wisconsin; Ph.D.,  
University of Illinois
- BENEDICT, JOEL A. (1946) - - Associate Professor of Education;  
Director, Audio-Visual Bureau  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- BIGELOW, LESLIE P. (1950) - - - Associate Professor of English  
A.B., A.M., Oberlin College, Ph.D., Ohio State University
- BINGHAM, DAVID A. (1957) - - - Instructor in Political Science  
A.B., Concord College; M.A., State University of Iowa
- BOARD, CORNELIUS Z. (1955) - - - Instructor in Technology  
B.S., Arizona State College at Tempe
- BOOTH, JOHN H., M/Sgt. (1955) - Instructor in Military Science  
and Tactics
- BOWERS, CHARLES O. (1948) - - - Assistant Professor of Music  
M.S., Southeast Missouri State College; M.M., Eastman School of Music
- BOWMAN, RUSSELL K. (1956) - Professor of Romance Languages;  
Chairman, Department of Foreign Languages  
B.A., M.A., Ph.D., Columbia University
- BRADLEY, JOHN A. (1956) - - Assistant Professor of Engineering  
B.S. in M.E., Professional Degree of M.E., Rose Polytechnic  
Institute; Registered Mechanical Engineer in Arizona
- BRATCHER, AUSTIN S. (1946) - - - - Professor of Marketing  
B.A., Trinity University; M.A., M.B.A. (Statistics), University of  
Texas; M.B.A. (Marketing), University of Chicago
- BRITTON, MERVIN (1956) - - - - - Instructor in Music  
B.S. in Mus. Ed., University of Illinois
- BROWN, DUANE (1951) - - - Associate Professor of Chemistry  
B.S., Brigham Young University; Ph.D., Cornell University
- BRYANT, FRED O. (1950) - - - Assistant Professor of Physical  
Education  
B.S., Springfield College; M.S., University of Illinois
- BUKER, ALDEN P. (1955) - - Assistant Professor of Humanities  
A.B., A.M., Harvard University; Ph.D., Boston University

- BULLOCK, ARNOLD H. (1938) - - - - - Professor of Music  
B.M., Yale School of Music; M.A. in Ed., Arizona State College at Tempe
- BURDETTE, WALTER E. (1956) - Assistant Professor of Industrial Arts; Head, Division of Technology  
B.S., M.S., Ed.D., University of Missouri
- BURGOYNE, EDWARD E. (1951) - Associate Professor of Chemistry  
B.S., Utah State Agricultural College; M.S., Ph.D., University of Wisconsin
- BURK, KARL W. (1949) - - - Assistant Professor of Technology  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe; Ed.D., Bradley University
- BURKHARD, SAMUEL (1921) - - Professor Emeritus of Education  
B.A., Goshen College; M.A., Columbia University; Ph.D., New York University  
RETIRED
- BURTON, A. R. (1941) - - - - - Professor of Accounting  
B.S., M.S., Kansas State Teachers College; Ph.D., University of Nebraska; C.P.A., Arizona
- BYERS, FRANK R. (1947) - - - - - Professor of Drama; Director, Drama Workshop  
B.A., M.A., University of Cincinnati
- BYERS, NELL B. (1934) - - - Associate Professor of Education  
B.A., M.A., University of Cincinnati; M.A., Ohio State University
- CALLOWAY, MARY L. (1955) - - - - - Assistant Professor of Office Administration  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- CARON, ALEXIS A. (1955) - - - - - Instructor in French  
B.A., University of Massachusetts; M.A., University of Minnesota
- CARR, ALICE ROSE (1955) - - Associate Professor of Mathematics  
Education  
A.B., St. Mary's College; M.A., Ohio University
- CASTILLO, SENON A. (1948) - - Instructor in Physical Education; Track Coach  
B.A. in Ed., Arizona State College at Tempe
- CAVALLIERE, WILLIAM A. (1945) Assistant Professor of Technology  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- CHAUSOW, EUGENE (1956) - - - - - Instructor in Music  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- CLOTHIER, RONALD R. (1955) - - Assistant Professor of Zoology  
A.B., Fresno State College; M.A., Montana State University; Ph.D., University of New Mexico
- COBB, PHIL R. (1957) - - - Assistant Professor of Engineering  
B.S., M.S., Agricultural and Mechanical College of Texas
- COLEMAN, CECIL N., JR. (1957) - Assistant Professor of Physical Education; Assistant Football Coach  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- CONLIN, DAVID A. (1948) - - - Associate Professor of English  
A.B., Syracuse University; Ph.D., Yale University
- COOKE, FRANKLIN O. (1956) - - Assistant Professor of English  
B.A., Princeton University; M.A., Colorado College; Ph.D., University of Colorado
- COONROD, ROBERT W. (1955) - - Associate Professor of European History; Chairman, Department of History and Political Science  
B.S. in Ed., Southwest Missouri State Teachers College; M.A., Ph.D., Stanford University
- COOPER, NORMAN C. (1956) - - Assistant Professor of Education  
B.A., M.A., Drake University; Ph.D., University of Southern California
- COPPOCK, HAROLD W. (1957) - Associate Professor of Psychology  
A.B., Antioch College; Ph.D., Indiana University

- CROWLEY, CLYDE A. (1956) - - - - Professor of Chemistry and  
Engineering  
B.S. in E.E., Chicago Technical College; M.S., Ph.D., Loyola  
University, Chicago
- DAMMANN, ARTHUR E. (1955) - Assistant Professor of Zoology;  
Assistant Director, Poisonous  
Animals Research Laboratory  
B.S., Arizona State College at Tempe; M.S., University of Michigan
- DANNENFELDT, KARL H. (1956) - - - - Professor of History;  
Head, Division of Behavioral and Social Sciences  
A.B., Valparaiso University; M.A., Indiana University  
Ph.D., University of Chicago
- DAVIS, SANDFORD S. (1953) - - Associate Professor of Education  
B.A., B.S., Central Missouri State College; M.A., University of  
Missouri; Ed.D., University of Colorado
- DEMAREST, HAROLD R. (1957) - - Associate Professor of Business  
Administration  
B.S., U. S. Naval Academy; M.S.E., Harvard University;  
M.S., Florida State University
- DEVINE, DANIEL J. (1955) - - - Associate Professor of Physical  
Education; Head Football Coach  
B.S., University of Minnesota; M.A., Michigan State University
- DICKINSON, ARTHUR L. (1952) - - Assistant Professor of Physical  
Education; Trainer, Intercollegiate Athletics  
B.A., Iowa State Teachers College; M.S., Indiana University
- DOLPHIN, VERNON M. (1954) - Assistant Professor of Psychology  
and Philosophy  
B.A., M.A., University of Minnesota
- DORTON, JOSEPH (1956) - - - Assistant Professor of Psychology  
B.A., University of Tennessee; M.A., Western Reserve University
- DOUTHIT, J. C. (1950) - - - Assistant Professor of Engineering  
B.E.E., University of Arkansas; M.A. in Ed., Arizona State College  
at Tempe; Registered Electrical Engineer in Arizona
- DRESSKELL, MILES A. (1945) - - - - - Professor of Music  
A.B., San Jose State College; B.M., Northwestern University;  
M.A., Teachers College, Columbia University
- DRESSKELL, NADINE (1946) - - - - Assistant Professor of Music  
B.S., Bowling Green State College; M.A., Teachers College,  
Columbia University
- DUDLEY, GUILFORD (1956) - - - Assistant Professor of History  
B.A., Harvard University; M.A., Ph.D., University of California  
at Los Angeles
- ELIAS, JACK Z. (1956) - - - Assistant Professor of Psychology  
B.S., College of the City of New York; M.A., Columbia University;  
Ph.D., New York University
- ELLIS, JOHN C. (1957) - - - - - Instructor in English  
B.A., M.A., University of Oregon
- ELLSWORTH, LOLA, (1938) Associate Professor of Home Economics  
B.S., Brigham Young University; M.A., Teachers College,  
Columbia University
- ELMORE, JAMES W. (1949) - Associate Professor of Architecture;  
Head, Division of Architecture  
A.B., University of Nebraska; M.S. in Architecture, Columbia  
University; Registered Architect in Arizona
- ERICKSON, JAMES H. M. (1955) - Assistant Professor of Education  
B.S., University of Minnesota; M.E., University of Colorado;  
Ed.D., University of Wyoming
- ERICKSON, MELVIN C. (1955) - - Assistant Professor of Physical  
Education; Baseball Coach  
B.A., Wisconsin State College; M.A. in Ed., University of Wisconsin
- ERNO, RICHARD B. (1957) - - - - - Instructor in English  
A.B., Michigan State University; M.A., University of Denver
- ESCODERO, MARY JULIETTE (1948) - Associate Professor of Spanish



- Diplome, University of Paris-Institute de Phonétique; A.B., San Diego State College; M.A., Claremont Graduate School; Ph.D., Cornell University
- ESSIG, MARY (1947) - - Assistant Professor of Home Economics;  
Hostess, Home Management House  
B.S. in Ed., University of Missouri; M.E., Colorado State College  
of Agriculture and Mechanic Arts
- FABIAN, MICHAEL W. (1956) - - - - - Instructor in Biology  
B.S., Grove City College; M.S. Michigan State University
- FAILING, FRANCES E. (1956) - - - - Assistant Professor of Art  
B.S., Western Reserve University; M.A., Columbia University
- FARRIS, MARTIN T. (1957) - - Assistant Professor of Economics  
B.A., M.A., Montana State University
- FERRELL, PALMORE A., LT. COLONEL (1957) - Professor of Military  
Science and Tactics; Chairman, Department of  
Military Science and Tactics  
B.S., Virginia Polytechnic Institute
- FIELDING, JANE P. (1957) - - - - - Instructor in Education  
B.S., Western Reserve; M.S., University of Wisconsin
- FINLEY, LUTHER E. (1950) - Assistant Professor of Technology  
B.S., M.A. in Ed., Arizona State College at Tempe; Ed.D., Bradley  
University; Licensed Land Surveyor in Arizona
- FITZGIBBONS, EUGENE T., CAPTAIN (1955) - Assistant Professor of  
Military Science and Tactics  
B.S., Fordham University
- FLETCHER, GRANT (1956) - - - - - Professor of Music  
B.M., Wesleyan University; M.M., University of Michigan;  
Ph.D., Eastman School of Music of the University of Rochester
- FLETCHER, THOMAS H. (1954) - Instructor in Physical Education;  
Assistant Football Coach  
B.S., Arizona State College at Tempe
- FRENCH, HELEN AIKEN (1949) - Assistant Professor of Education  
B.S. in Ed., Geneva College; M.A., University of Pittsburgh
- FREUND, JOHN E. (1957) - - - - - Professor of Mathematics  
B.A., M.A., University of California, Los Angeles;  
Ph.D., University of Pittsburgh
- FUCHS, JACOB (1952) - - - - Associate Professor of Chemistry  
B.A., New York University; M.S., Ph.D., University of Illinois
- GAFFNEY, PHILIP D. (1957) - - Assistant Professor of Education  
B.S., Northern Illinois State College; M.A., State University of Iowa
- GILLANDERS, DOROTHY F. (1937) - - - - Associate Professor of  
Physical Education  
B.S., Oregon State College; M.A., Teachers College, Columbia  
University; Registered Physical Therapist, Walter Reed Hospital;  
Ed.D., University of Southern California
- GIORDANO, ALBERT G. (1956) - - Assistant Professor of Business  
Administration  
B.A., Arizona State College at Tempe; M.Ed., University of  
Pittsburgh; M.S., Indiana University
- GISOLO, MARGARET (1954) - - - Assistant Professor of Physical  
Education  
B.S., Indiana State Teachers College; M.A., New York University
- GOO, BENJAMIN N. (1955) - - - - Assistant Professor of Art  
B.F.A., State University of Iowa; M.F.A. in Ed., Cranbrook Academy  
of Art
- GOODWIN, JOHN B. (1948) - - Assistant Professor of Technology  
B.A. in Ed., Arizona State College at Tempe; M.S., Oregon  
State College
- GRAHAM, MARY ELIZABETH (1955) - - - Instructor in Physical  
Education  
B.S. in Ed., University of Arizona; M.A. in Ed., Arizona State  
College at Tempe

- GRIER, MARVIN (1957) - - - - Instructor in Physical Education  
B.S., Wisconsin State College; M.A., New York University
- GRIMES, JOHN O. (1928) - - Professor Emeritus of Psychology  
B.S. in Ed., Ohio University; M.A., Ph.D., University of Michigan  
RETIRED
- GROBE, EDWIN P. (1957) - - - - - Instructor in French  
and German  
A.B., William Jewell College; M.A., Ph.D., Indiana University
- GURNEE, HERBERT (1943) - - - - - Professor of Psychology  
B.A., M.A., Wesleyan University; Ph.D., Harvard University
- GUTENBERG, ARTHUR W. (1951) - - - - Assistant Professor of  
Management  
B.A.S., B.S., M.B.A., University of California;  
Ph.D., Stanford University
- HALE, J. D. (1956) - - - - - Assistant Professor of Art  
B.F.A., M.F.A., University of Southern California
- HANSON, HUGH (1948) - - - - Assistant Professor of Zoology  
B.S. in Ed., Kansas State Teachers College; M.S., Ph.D.,  
University of Illinois
- HARELSON, HARRY B. (1935) - - - - - Professor of Music  
B. Pub. Sch. Mus., M.M., Columbia School of Music
- HARTER, TOM J. (1937) - - - - - Professor of Art  
B.A. in Ed., Arizona State College at Tempe;  
M.F.A., University of Oregon
- HARWARD, NAOMI M. (1956) - - Assistant Professor of Sociology  
B.A., Northwestern University; B.D., Garrett Biblical Institute;  
M.A. in Ed., M.M. in Social Service Adm., University of Chicago
- HEADINGTON, ROBERT C. (1953) - - - - Professor of Real Estate  
A.B., Kenyon College; M.S., Ph.D., Ohio State University
- HEIMANN, ROBERT A. (1952) - Associate Professor of Education  
B.S., Wisconsin State College; M.S., Ph.D., University of Wisconsin
- HENSHAW, MARJORIE B. (1953) - - Assistant Professor of English  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- HERMAN, GEORGE R. (1956) - - - - - Instructor in English  
B.S. in Ed., University of Kansas
- HERRICK, THOMAS R. (1954) - - Assistant Professor of Political  
Science  
A.B., University of Chicago
- HERRING, JACK W. (1955) - - - Assistant Professor of English  
B.A., M.A., Baylor University
- HILDEBRAND, PAUL G., CAPT. (1957) - Assistant Professor of Air  
Science  
B.A., University of the Philippines
- HILKERT, E. J. (1933) - - Professor of Business Administration;  
Dean Emeritus, College of Business Administration  
B.S. in Bus. Ad., M.A., University of Southern California;  
LL.B., University of Notre Dame; C.P.A., Arizona and California
- HINES, HAROLD C. (1952) - - - - Associate Professor of Music;  
Director of Band  
B.S. in Mus. Ed., M.S. in Mus. Ed., University of Illinois
- HOOVER, HELENE MAE (1957) - - - Assistant Professor of Home  
Economics  
B.S., M.S., Louisiana State University
- HOOVER, KENNETH H. (1956) - Assistant Professor of Education  
B.S., M.A., Louisiana State University; Ed.D., University of Washington
- HORNE, GAIL B. (1955) - - - Assistant Professor of Accounting  
B.S., M.A. in Ed., Arizona State College at Tempe; C.P.A., Arizona
- \*HOROWITZ, DAVID L. (1956) - - - - - Instructor in English  
A.A., Phoenix College; B.A., Arizona State College at Tempe;  
M.A., University of California

\*On Leave 1957-58.

- HUBBARD, PAUL G. (1950) - - - Associate Professor of History  
B.A., Wabash College; M.A., Ph.D., University of Illinois
- HUBER, PAUL (1954) - - - - - Assistant Professor of Speech  
B.A., Muskingum College; B.D., Emory University;  
A.M., Ph.D., University of Michigan
- JACOBSON, ARTHUR (1956) - - - - - Instructor in Art  
B.S., M.S., University of Wisconsin
- JEFFERY, CLARENCE R. (1957) - Assistant Professor of Sociology  
A.B., Ph.D., Indiana University
- JELINEK, JAMES J. (1953) - - - - - Professor of Education  
B.S. in Ed., University of Illinois; M.A. in Ed., Northwestern  
University; Ed.D., Indiana University
- JELLEY, HERBERT M. (1957) - - - Assistant Professor of Office  
Administration  
B.S., University of Minnesota; Ed.M., University of Cincinnati
- JENCKES, KENYON S., M/SGT. (1956) - - - Instructor in Military  
Science and Tactics
- JOHNSON, JAMES E. (1957) - - - - - Instructor in English  
B.S., Northern State Teachers College; M.A., University of Minnesota
- JOHNSON, ROY M. (1955) - - - - Assistant Professor of Botany  
A.B., M.S., University of Chicago
- JUDD, B. IRA (1937) - - - - - Professor of Agronomy  
B.S., M.S., Utah State Agricultural College; Ph.D., University  
of Nebraska
- KAGY, VIRGINIA L. (1947) - - - - Associate Professor of Home  
Economics  
B.A., Drake University; M.S., Iowa State College; Ph.D., Johns  
Hopkins University
- KAJIKAWA, WILLIAM (1937) - - Assistant Professor of Physical  
Education  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- KARP, MARVIN, CAPTAIN (1955) Assistant Professor of Air Science  
B.S., University of Alabama;  
M.A. in Ed., Arizona State College at Tempe
- KAUFMAN, LUCILE B. (1950) - Assistant Professor of Engineering  
B.S. (M.E.), M.S., University of Colorado;  
Registered Mechanical Engineer in Arizona and Illinois
- KEATING, PATRICIA B. (1948) - - - Assistant Professor of Music  
B.M., University of Illinois; M.M., Northwestern University
- KEENAN, RUTH H. (1953) - - - Assistant Professor of English  
B.A., M.A., University of Montana
- KEITH, MARLOW (1946) - - - Assistant Professor of Technology  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- KEVANE, CLEMENT J. (1956) - - Associate Professor of Physics  
B.S., Ph.D., Iowa State College
- KLANN, MARGARET L. (1945) - - Associate Professor of Physical  
Education  
B.S. in Ed., University of Illinois; M.A., Colorado State  
College of Education
- KLARE, NORMAND E., CAPTAIN (1954) - Assistant Professor of Air  
Science
- KLOSTER, PAULA R. (1927) - - - - - Professor of Art;  
Curator, Collection of American Art  
B.S., University of North Dakota; M.A., Stanford University
- KRENKEL, JOHN H. (1947) - - - - - Professor of History  
B.S. in Ed., University of Illinois; M.A., Claremont Graduate  
School; Ph.D., University of Illinois
- KRUEGER, CALVERT (1957) - - Associate Professor of Accounting  
B.S. in B.A., University of Wichita; M.A., University of North Dakota
- KUSH, FRANK (1955) - - - - Instructor in Physical Education;  
Assistant Football Coach  
B.S., Michigan State University

- LANDSEADEL, ROBERT J., JR., CAPTAIN (1955) - Assistant Professor  
of Military Science and Tactics  
B.A., University of Pittsburgh
- LAVIK, RUDOLPH H. (1933) - - Professor of Physical Education  
B.A., Concordia College; B.P.E., Springfield College;  
M.A., University of Southern California
- LAVIN, MARY VIRGINIA (1948) - - Assistant Professor of Speech  
B.A., University of Oregon; M.A., University of Washington
- LAW, MARJORIE L. (1957) - - Instructor in Physical Education  
B.A. in Ed., Arizona State College at Tempe
- LEATHERS, CHESTER R. (1957) - - Assistant Professor of Botany  
B.S., Eastern Illinois State College; M.S., Ph.D., University of Michigan
- LEWIS, ANITA X. R. (1957) - - - - - Instructor in Economics;  
Assistant in Bureau of Business Services  
B.S., Northwestern University; M.A., Columbia University
- LEWIS, MAURICE S. (1954) - - Associate Professor of Education;  
Principal, I. D. Payne Training School  
B.S. in Ed., M.S. in Ed., Drake University; Ed.D., Colorado  
State College of Education
- LINDSTROM, FREDERICK B. (1953) Assistant Professor of Sociology  
A.B., A.M., Ph.D., University of Chicago
- LOWE, JOHN W. (1956) - - - Assistant Professor of Economics  
B.S., Arizona State College at Tempe; M.S., University of Wisconsin;  
Ph.D., University of Florida
- LOWENSTEIN, LLOYD L. (1957) - - - - Professor of Mathematics  
A.B., Ph.D., Cornell University
- LOWNEY, ANNE S. (1957) - - Instructor in Physical Education  
B.A., Hunter College; M.A., New York University
- LYLE, MARY G. (1957) - - - - - Instructor in English  
A.B., University of Iowa; A.M., University of South Dakota
- LYON, ROBERT B. (1938) - - Associate Professor of Mathematics  
B.S., B.M., University of Illinois; M.S., University of Idaho
- MANNING, DUANE (1951) - - - - - Professor of Education  
B.S., M.A., Ball State Teachers College; Ed.D., Indiana University
- MARTINEZ, QUINO E. (1957) - - - Assistant Professor of Spanish  
B.S. in Sec. Ed., New Mexico Western; M.A., George Peabody  
College; Ph.D., University of North Carolina
- MCCLEARY, JAMES A. (1947) - - - - - Professor of Botany;  
Chairman, Department of Botany  
B.A., Asbury College; M.S., Ohio University;  
Ph.D., University of Michigan
- MCCOY, DONALD B., CAPTAIN (1955) - Assistant Professor of Air  
Science  
B.A., Iowa State Teachers College; M.A. in Ed., Arizona State  
College at Tempe
- MCGRATH, G. D. (1950) - - - - - Professor of Education;  
Dean, College of Education  
A.B., Findlay College; M.A., University of Michigan;  
Ph.D., University of Colorado
- MEISTER, ARNOLD G. (1957) - - - - - Professor of Physics  
B.S., Central YMCA College; Ph.D., Illinois Institute of Technology
- #MENKE, ROBERT F. (1947) - - - - - Professor of Education;  
Director of Placement Center  
B.S., Oshkosh State College; M.A., Ph.D., Northwestern University
- MERRITT, CHARLES H. (1946) - Associate Professor of Engineering  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- MILLER, PAUL T. (1947) - - - - - Professor of Geology;  
Chairman, Department of Geology  
A.B., Simpson College; M.S., Ph.D., University of Iowa
- MILLS, DONALD F. (1957) - - - Assistant Professor of Education  
B.A., Northern Idaho College of Education; M.E., University  
of Washington

#On Leave, First Semester, 1957-58.

- MOFFIT, INEZ W. (1953) - Assistant Professor of Library Science  
B.A., Iowa State Teachers College; B.S. in L.S., University of  
Minnesota; M.A., University of Denver
- MONTAGUE, GENE B. (1957) - - - - - Instructor in English  
B.A., Central Washington College; M.A., Ph.D., University of Texas
- MOODY, E. GRANT (1951) Assistant Professor of Dairy Husbandry  
B.S., University of Arizona; M.S., Kansas State College;  
Ph.D., Purdue University
- MOOMAW, HOLLIS R., MAJOR (1957) - Assistant Professor of Air  
Science  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- MORTENSEN, MARTIN (1932) Associate Professor of General Science  
B.A., Brigham Young University; M.A., University of Arizona
- MOUNT, DICK (1948) Associate Professor of Office Administration  
and Business Education  
B.A., Simpson College; M.S., Drake University
- MURPHY, NINA L. (1924) - - - Professor of Physical Education  
B.S. in Ed., University of Arizona; M.A., University of Southern  
California
- \*MYERS, LOUIS M. (1937) - - - - - Professor of English;  
Head, Division of Language and Literature;  
Chairman, Department of English  
B.A., St. Stephens College; M.A., Columbia University;  
Ph.D., University of California
- NEEB, LEWIS S. (1931) - - - - - Professor of Industrial Arts  
B.A. in Ed., M.A., University of Arizona;  
Registered Mechanical Engineer in Arizona
- NUTT, MERLE C. (1956) - - Assistant Professor of Engineering  
B.S. in Ch.E., Illinois Institute of Technology; M.A., University  
of Iowa; LL.D., Illinois Wesleyan University
- ONOFRIO, ALBERT J. (1947) - - - Assistant Professor of Physical  
Education; Assistant Coach  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- OSBORN, GRANT (1957) - - - - Associate Professor of Insurance  
B.S., Brigham Young University; M.B.A., Stanford University;  
Ph.D., University of Pennsylvania
- OSENBURG, FREDERIC C. (1946) - - Associate Professor of English  
B.A., M.A., University of Michigan; Ph.D., University of Illinois
- OVERMAN, GLENN D. (1956) Professor of Business Administration;  
Dean, College of Business Administration  
B.S., Central State College; M.S., Oklahoma Agricultural and  
Mechanical College; D.B.A., Indiana University
- PARKER, ERNEST L. (1950) - - - Professor of Animal Husbandry  
Ph.D., University of Leipzig, Germany
- PARKER, L. MAYLAND (1955) - - - Assistant Professor of Farm  
Management  
B.S., Brigham Young University; M.S., University of  
Utah; Ph.D., Cornell University
- PATTERSON, ROBERT A. (1957) - - Assistant Professor of Zoology  
B.S., University of Michigan; M.S., Ohio State University
- PAYNE, IRA DAWSON (1911) - - Professor Emeritus of Education  
RETIRED  
B.A., M.A., Stanford University; LL.D.,  
Arizona State College at Tempe
- PEABODY, STANLEY J. (1952) - Assistant Professor of Technology  
B.S., M.A. in Ed., Arizona State College at Tempe
- #PEARSON, JAMES W. (1956) - Instructor in Office Administration  
B.S. in B.A., M.A. in B.A., Indiana University
- PERRIL, LESTER S. (1957) - - - - - Professor of Sociology;  
Chairman, Department of Sociology and Anthropology  
B.A., Ohio Wesleyan University; M.A., Ohio State University;  
Ph.D., University of North Carolina

\*On Leave 1957-58.

#On Leave, First Semester, 1957-58.

- PITTMAN, ANNE (1952) Assistant Professor of Physical Education  
B.S. in P.E., University of Texas; M.A. in Ed. Admin., New York University
- PLUMMER, RAMONA FARISH (1957) Instructor in Physical Education  
B.S., M.A., University of Alabama
- PODLICH, WILLIAM F., JR. (1949) - - - Professor of Education;  
Director of Teacher Education  
B.S., Maryland State Teachers College; M.A., Teachers College,  
Columbia University; Ph.D., State University of Iowa
- POOLE, EDGAR T., JR., LT. COL. (1954) - Professor of Air Science;  
Chairman, Department of Air Science  
B.S., U. S. Military Academy, West Point
- PORTNOFF, COLLICE H. (1945) - - - - - Professor of English  
B.A., M.A., University of California; Ph.D., Stanford University;  
F.A.A.R., M.A., American Academy in Rome
- QUAID, HAZEL HARVEY (1931) - - - Associate Professor of Music  
B.A. in Ed., Arizona State College at Tempe; M.A., Northwestern  
University
- RALSTON, MACK A. (1956) - - Assistant Professor of Education  
B.S. in Ed., M.S. in Ed., Indiana State Teachers College;  
Ed.D., Indiana University
- RANNELLS, JESSIE M. (1939) - - - Professor of Home Economics;  
Head, Division of Home Economics;  
Chairman, Department of Home Economics  
B.S., Iowa State College; M.S., Cornell University;  
Ph.D., University of Wisconsin
- RASMUSSEN, ROBERT D. (1949) - - Assistant Professor of Animal  
Husbandry  
B.S., Iowa State College; M.S., Washington State College
- RATLIFF, JOHN D. (1954) - - - - Assistant Professor of English  
B.A. in Ed., Arizona State College at Tempe; M.A., Claremont  
Graduate School; Ph.D., Stanford University
- #RAWLS, WILLIAM S. (1949) - - Assistant Professor of Physics  
B.S., Murray State College; M.S., Tulane University
- RENNER, GEORGE T., III (1951) Associate Professor of Geography;  
Chairman, Department of Geography  
B.A., Stanford University; M.A., Ed.D. (Geography),  
Columbia University
- RICE, ROSS R. (1950) - - Associate Professor of Political Science  
M.A., Ph.D., University of Chicago
- RICE, ROY C. (1946) - - - - - Professor of Education;  
Director of Summer Session,  
Extension and Correspondence  
B.S., New Mexico University; M.S., Massachusetts State College;  
Ph.D., University of Texas
- RICHARDSON, GRANT L. (1953) - - - - - Professor of Agronomy  
B.S. in Agric., M.S., University of Arizona; Ph.D., Oregon State College
- RICHARDSON, HAROLD D. (1940) - - - - Professor of Education;  
Academic Vice President; Chairman, Division of Instruction  
Ph.B., Ph.M., University of Wisconsin; Ph.D., Northwestern University
- RICKEL, HARRY P. (1948) - - - - Associate Professor of Music  
B.M., M.M., University of Arizona
- RIDER, WENDELL J. (1953) - - - - - Professor of Music;  
Acting Chairman, Department of Music  
B.S., Iowa State Teachers College; M.M., Eastman School of Music;  
Ph.D., University of Iowa
- RIESE, RUSSELL L. (1957) - - - - Professor of Engineering  
B.S. in E.E., University of Washington; M.S., Ph.D., Oklahoma  
Agricultural and Mechanical College
- RIGGINS, L. F. (1946) - - - Assistant Professor of Agricultural  
Mechanics  
B.S. in Ed., Arizona State College at Flagstaff

#On Leave, First Semester, 1957-58.

- ROBERTS, BYRON D. (1957) - Associate Professor of Mathematics  
B.A., M.A., Indiana University; Ph.D., State University of Iowa
- ROBINS, ROLAND K. (1957) - - Associate Professor of Chemistry  
A.B., M.A., Ph.D., Oregon State College
- ROBINSON, DANIEL O. (1948) - - - - - Professor of Agronomy;  
Head, Division of Agriculture  
A.B., Brigham Young University; M.A., University of Arizona;  
Ph.D., Ohio State University
- ROSS, STANDEY H. (1957) - - Assistant Professor of Geography  
B.A., M.A., University of Colorado
- ROVER, R. CRAIG (1952) - - - Assistant Professor of Education  
B.A., Upsala College; M.A., St. Lawrence University;  
Ph.D., Cornell University
- RYAN, MARJORIE (1957) - - - - - Instructor in English  
A.B., A.M., University of Michigan
- SCHAUMBURG, DONALD R. (1953) - - - Assistant Professor of Art  
B.A. in Ed., California College of Arts and Crafts;  
M.F.A., Claremont Graduate School
- SCHILLING, DOROTHY C. (1932) - - - - Professor of English and  
Humanities; Chairman, Department of Humanities  
B.A., M.A., Ph.D., Stanford University
- SCHMIDT, MILDRED E. (1956) - - - Assistant Professor of Home  
Economics  
B.A., Nebraska State Teachers College; M.S., Kansas State College
- SCHROEDER, CLIFFORD M. (1957) - Assistant Professor of Physics  
B.S. in Physics, M.A., Ph.D., Ohio State University
- SCOULAR, DAVID B. (1952) - - - - - Professor of Music  
B.M., Lawrence College; A.B., Texas Christian University;  
M.A., Columbia University
- SHAPIRO, HAROLD A. (1956) - - Associate Professor of Economics  
and Economist, Bureau of Business Services  
B.S., Milwaukee State Teachers College; M.Ph., University of  
Wisconsin; Ph.D., University of Texas
- SHAW, LEE (1955) - - - - - Instructor in English  
B.S., M.A. in Ed., Arizona State College at Tempe
- SHOEMAKER, WILFRED L. (1955) Assistant Professor of Education  
B.S. in Ed., M.Ed., Ed.D., University of Missouri
- SKINNER, H. CLAY (1938) - - - - - Professor of Psychology;  
Chairman, Department of Psychology and Philosophy  
B.S. in Ed., Ohio University; M.A., Ohio State University;  
Ph.D., New York University
- SMITH, CLYDE B. (1952) - - - Associate Professor of Physical  
Education; Head, Division of Health,  
Physical Education and Recreation;  
Director, Department of Intercollegiate Athletics  
A.B., Geneva College; M.S. in Ed., Indiana University
- SMITH, MARION W. (1952) - - - - Assistant Professor of Voice  
B.S. Music Ed., Capital University; M.M., American  
Conservatory of Music
- SMITH, PAUL R., MAJOR (1956) - Assistant Professor of Military  
Science and Tactics
- \*SMITH, SYDNEY RUSSELL (1947) - - - Professor of Psychology  
B.A., M.A., Ph.D., University of California
- STAATS, ARTHUR W. (1955) - - Assistant Professor of Psychology  
B.A., M.A., Ph.D., University of California at Los Angeles
- STAFFORD, KENNETH (1957) - - Assistant Professor of Education  
B.A., M.Ed., Ph.D., University of Oklahoma
- STAHNKE, HERBERT L. (1941) - - - - Professor of Zoology;  
Head, Division of Life Sciences;  
Chairman, Department of Zoology;  
Director, Poisonous Animals Research Laboratory  
S.B., University of Chicago; M.A., University of Arizona;  
Ph.D., Iowa State College

\*On Leave 1957-58.

- STALZER, FRANK S. (1955) - - - - Assistant Professor of Music  
B.M.Ed., University of Kansas; M.M.Ed., Eastman School of Music
- STEPHENS, ALAN A. (1954) - - - Assistant Professor of English  
A.B., M.A., University of Denver; Ph.D., University of Missouri
- STEVerson, NORRIS J. (1932) - - Associate Professor of Physical  
Education  
B.A. in Ed., Arizona State College at Tempe; M.S., University of  
Southern California
- STEWART, KENNETH M. (1947) - Associate Professor of Sociology  
A.B., M.A., Ph.D., University of California
- STITES, WILLIAM H. (1954) - - - Assistant Professor of Speech  
B.A., Louisiana Polytechnic Institute; M.A., Ph.D., University  
of Denver
- STOUT, IRVING W. (1953) - - - - - Professor of Education;  
Director of Graduate Study  
B.Ed., Platteville State Teachers College; M.A.,  
Ed.D., Northwestern University
- TAYLOR, LOUIS (1949) - - - - - Assistant Professor of English  
B.S. in Ed., M.A., Ohio State University
- TAYSOM, ELVIN D. (1953) - - - - Assistant Professor of Animal  
Husbandry  
B.S., University of Idaho; M.S., Utah State Agricultural College
- THOMPSON, LEE P. (1955) - - - - Professor of Engineering;  
Dean, College of Applied Arts and Sciences;  
Head, Division of Engineering  
B.A., Indiana University; M.S., Ph.D., Agricultural and  
Mechanical College of Texas; Registered Engineer in Texas
- THOMSON, RONALD G. (1947) - - Associate Professor of Physical  
Education; Chairman, Department of Health,  
Physical Education and Recreation  
B.S., Springfield College; M.A. in Ed., Arizona State College  
at Tempe; Ed.D., University of Southern California
- TILDEN, ARNOLD (1937) - - - - - Professor of History;  
Dean, College of Liberal Arts  
California  
B.A., M.A., DePauw University; Ph.D., University of Southern  
California
- TURNER, KATHERINE C. (1946) - - - - - Professor of English  
B.Ed., Illinois State Normal University; M.A., Ph.D., University  
of Michigan
- VAN PETTEN, DONALD R. (1942) - - Professor of Political Science  
B.A. in Ed., Arizona State College at Tempe; M.S., University  
of Southern California; Ph.D., Stanford University
- VERGIS, JOHN P. (1954) - - - Associate Professor of Education  
B.S., M.A., New York University; Ed.D., University of Southern  
California
- VON DER HEYDT, ALFRED (1950) - Associate Professor of German  
Diploma, University of Frankfurt-on-the-Main; M.A., Yale University;  
Ph.D., Cornell University
- VOTICHENKO, T. ALEXANDER (1956) - - - Assistant Professor of  
Philosophy  
B.A., Princeton University; M.A., Columbia Military  
Government School
- WAGER, ALAN T. (1949) - - - - - Professor of Physics;  
Chairman, Department of Physics and Astronomy  
B.S., Hobart College; M.A., Cornell University; Ph.D., University  
of Chicago
- WATKINS, LOWELL A. (1956) Assistant Professor of Management  
B.S., Illinois State Normal University; M.B.A., Denver University
- WEBSTER, JAMES E., CAPT. (1957) - - Assistant Professor of Air  
Science  
B.S., Arizona State College at Tempe
- WEGNER, ARTNOLL L. (1957) - - Professor of Physical Education  
B.S., Wisconsin State College; M.S., University of Wisconsin;  
P.E.D., Indiana University



- WEISS, THOMAS M. (1956) - - Assistant Professor of Education  
B.A., M.A., Ph.D., Michigan State University
- WELSH, RICHARD K. (1949) - - - Assistant Professor of English  
A.B., DePauw University
- WEXLER, CHARLES (1930) - - - - - Professor of Mathematics;  
Chairman, Department of Mathematics  
B.S., Harvard College; M.S., Ph.D., Harvard University
- WICKENS, ALICE R. (1956) - - Assistant Professor of Psychology  
B.A., Morningside College; M.A., University of Chicago
- WILCOX, JOYCE H. (1956) - - - - - Instructor in Chemistry  
B.S., M.S., University of Wichita
- WILCOX, SIDNEY W. (1955) - - - Assistant Professor of English  
B.A., Bethany-Peniel College; M.A., University of Oklahoma
- WILLSON, LORETTA L. (1947) - - Assistant Professor of Speech  
B.A., University of South Dakota; M.A., Northwestern University
- WILSON, IRMA (1922) - - - - - Professor of Spanish  
B.A., Montana State University; M.A., Teachers College,  
Columbia University; Ph.D., Columbia University
- WOCHNER, RAYMOND E. (1952) - - - - Professor of Education  
B.S., York College; M.S., University of Nebraska;  
Ph.D., University of Wyoming
- WOOD, HARRY (1954) - - - - - Professor of Art;  
Chairman, Department of Art  
B.A., M.A. (Journalism), University of Wisconsin;  
M.A., Ph.D. (Art), Ohio State University
- WULK, NED W. (1957) - - - - Assistant Professor of Physical  
Education; Basketball Coach  
B.S., Wisconsin State College; M.E., Xavier University
- YALE, FRANCIS G. (1952) Assistant Professor of Physical Sciences  
B.A., M.A., Colorado State College of Education;  
Ed.D., Teachers College, Columbia University
- YOUNG, GEORGE P. (1947) - - Associate Professor of Psychology  
B.A., Colorado State College; M.A., University of Colorado;  
Ph.D., Yale University
- YUEN, GEORGE U. (1957) - - - - - Instructor in Chemistry  
B.S., Arizona State College at Tempe; Ph.D., University of Utah
- ZACHER, ROBERT V. (1946) - - Associate Professor of Advertising  
B.S., M.S., University of Alabama
- ZASLOW, BERTRAM (1956) - - Assistant Professor of Chemistry  
B.A., Cornell University; M.S., University of Minnesota;  
Ph.D., Iowa State College
- ZECHMEISTER, EUGENE L., MAJOR (1955) - Assistant Professor of  
Air Science  
B.S., University of Southern California
- #ZIMMERMAN, J. E. (1946) - - - Associate Professor of English  
B.A., M.A., Baylor University
- ZIMMERMAN, VERA M. (1955) - - - - - Instructor in Speech  
B.E., B.A., University of California at Los Angeles;  
M.A., University of Redlands

#On Leave, First Semester, 1957-58.

## Affiliated Faculty

- ASH, R. A. - - - - - Assistant Professor of Engineering;  
Senior System Analysis—Arizona Public Service Co.  
B.A., B.S.E.E., Lehigh University; M.A. in Math.,  
University of Michigan
- BARGER, JAMES D. - - - - - Professor of Medical Technology;  
Pathologist—Good Samaritan Hospital  
A.B., B.S., University of North Dakota; M.D., University of  
Pennsylvania; M.S. (Pathology), University of Minnesota
- BENSON, ALLAN I. - - - - - Assistant Professor of Engineering;  
Manager—Computing Center, Computer Department,  
General Electric Company  
B.S. in Physics, University of Washington; M.S. in Math.,  
University of Wisconsin
- BOSWELL, HAROLD G. - - - - - Instructor in Engineering;  
Manager—Component Engineering, Computer  
Department, General Electric Company  
B.S.E.E., Purdue University
- BROWN, RAYMOND N. - - - - - Assistant Professor of Engineering;  
Computer Systems Analyst—Computer  
Department, General Electric Company  
B.A., M.A. in Math., Pennsylvania State University
- BURDICK, E. J. - - - - - Assistant Professor of Engineering;  
Senior Electrical Engineer—Arizona Public Service Co.  
B.S.E.E., California State Polytechnic College;  
M.S.E.E., Union College
- CASSIDY, EARLE M. - - - - - Assistant Professor of Engineering;  
Senior Engineer—Civil Engineering Department,  
Salt River Power District  
B.S., U. S. Naval Academy; B.C.E., M.C.E., Rensselaer  
Polytechnic Institute
- CONVERTI, V. - - - - - Assistant Professor of Engineering;  
Arizona Public Service Representative on  
Computer Research  
B.S.E.E., M.E.E., University of Arizona
- CROFT, WALTER H. - - - - - Assistant Professor of Engineering;  
Consulting Engineer—Arizona Public Service Co.  
B.S.E.E., University of Alabama; M.E.E., University of Arizona
- CURTIS, DAVID W. - - - - - Associate Professor of Engineering;  
Engineering Specialist—Goodyear Aircraft Corp.  
B.S., Western Michigan College; Ph.D., Iowa State College
- FRIED, BERNARD - - - - - Professor of Engineering;  
Stress and Vibration Engineer—  
AiResearch Manufacturing Co. of Arizona  
B.S., University of Illinois; M.S., Ph.D., Ohio State University
- GOSSICK, B. R. - - - - - Associate Professor of Engineering;  
Chief—Advanced Circuitry and Device  
Research, Motorola, Inc.  
B.A., Pomona College; M.A., Columbia University;  
M.S., Ph.D., Purdue University
- GROSCHE, HERBERT R. J. - - - - - Professor of Engineering;  
Manager—Applications, Computer Department,  
General Electric Company  
B.S., Ph.D. in Astronomy, University of Michigan
- HARMON, WILBUR D. - - - - - Instructor in Engineering;  
Senior Engineer—Motorola Inc.  
B.S.E.E., University of Arkansas; M.S.E.E., University of California
- HELMAN, D. - - - - - Associate Professor of Engineering;  
Systems Logic Designer—Computer Department,  
General Electric Company  
B.S.E.E., Israel Institute of Technology; M.S.E.E.,  
Ph.D.E.E., University of Michigan

- HUNTINGTON, ROBERT C. - - Assistant Professor of Engineering;  
Senior Engineer—Motorola Inc.  
B.S.E.E., M.S.E.E., University of Minnesota
- JACOBI, GEORGE T. - - - - Assistant Professor of Engineering;  
Manager—Analog Computers, Computer  
Department, General Electric Company  
B.S.E.E., M.S.E.E., Ohio State University
- KELLEY, ARCHIE P. - - - - Assistant Professor of Engineering;  
Assistant Chief of Preliminary Design—  
AiResearch Manufacturing Company of Arizona  
B.S., U. S. Naval Academy; M.S., Massachusetts Institute  
of Technology
- KENT, GEORGE - - - - Assistant Professor of Medical Technology;  
Associate Pathologist—St. Joseph's Hospital  
A.B., Dartmouth College; M.D., University of Colorado
- LAMBERT, JOHN W. - - - - Assistant Professor of Engineering;  
Development Engineer—AiResearch Manufacturing  
Company of Arizona  
B.S.M.E., University of Michigan; M.S. Engr., Ph.D. Engr.,  
Purdue University
- LEE, TSAI HWA - - - - - - - - Instructor in Engineering;  
Specialist—Computer Training, Computer  
Department, General Electric Company  
B.S.E.E., Case Institute of Technology; M.E.E., Cornell University
- LIKOS, JOSEPH J. - - Assistant Professor of Medical Technology;  
Associate Pathologist—Good Samaritan Hospital  
M.D., St. Louis University
- LOWENSTEIN, JEROME F. - - Associate Professor of Engineering;  
Electronic Project Engineer—Motorola Inc.  
B.S.E.E., M.S., Ph.D., Case Institute of Technology
- MAGNUSON, ROBERT A. - - - - - - Instructor in Engineering;  
Supervisor—Business Applications, Computer  
Department, General Electric Company  
A.B. in Math., New York University
- MARION, THOMAS - - - - Associate Professor of Engineering;  
Senior Engineer—Motorola Inc.  
B.A., M.A., University of Mississippi; Ph.D., Catholic University
- MAY, JOHN R. - - - - - Associate Professor of Engineering;  
Senior Preliminary Design Engineer—  
AiResearch Manufacturing Company of Arizona  
B.S., Northwestern Technological Institute;  
M.S., University of Michigan; Ph.D., Iowa State College
- MCCRACKEN, DANIEL D. - - Assistant Professor of Engineering;  
Manager—Training, Computer Department,  
General Electric Company  
B.A. in Math., B.A. in Chemistry, Central Washington  
College of Education
- MONSER, GEORGE J. - - - - Assistant Professor of Engineering;  
Electronic Project Engineer—Motorola Inc.  
B.S.E.E., Cornell University; M.S.E.E., West Virginia University
- MORONG, T. M. - - - - - Assistant Professor of Engineering;  
Chief Engineer—Agriculture Improvement  
District, Salt River Power District  
B.S.E.E., University of New Hampshire;  
M.S.E.E., University of Pennsylvania
- MYKLESTAD, NILS O. - - - - - Professor of Engineering;  
Head of Stress, Vibration and Gear Group—  
AiResearch Manufacturing Company of Arizona  
B.S., Royal Technical College, Copenhagen; Ph.D., Cornell University
- NORDE, LESLIE - - - - - Assistant Professor of Engineering;  
Engineering Section Leader—Motorola Inc.  
B.S.E.E., Cooper Union; M.S.E.E., Polytechnic Institute of Brooklyn

- REQUE, STYRK, G.** - - - - - Instructor in Engineering;  
 Consulting Engineer—Analog Computer,  
 Computer Department, General Electric Company  
 B.S. Physics, Pennsylvania State University
- ROBERTSON, SLOAN D.** - - - Associate Professor of Engineering;  
 Head—Radar Systems Department,  
 Goodyear Aircraft Corp.  
 B.S.E.E., University of Dayton; M.S., Ph.D., Ohio State University
- ROSENTHAL, MAURICE** Associate Professor of Medical Technology;  
 Pathologist—Memorial Hospital  
 M.D., Medical College of Virginia
- SCHARF, GEORGE** - - Assistant Professor of Medical Technology;  
 Associate Pathologist—Memorial Hospital  
 B.A., M.S., M.D., University of California
- SILVERMAN, SEYMOUR B.** - - - - -Assistant Professor of Medical  
 Technology; Associate Pathologist—Memorial Hospital  
 B.S., M.D., C.M., McGill University
- SPIEGELTHAL, EDWIN S.** - - Assistant Professor of Engineering;  
 Supervisor—Computer Techniques, Computer  
 Department, General Electric Company  
 B.A., M.S. in Math., New York University
- STAPLEY, LOREL AARON** Assistant Professor of Medical Technology;  
 Assistant Pathologist—St. Joseph's Hospital  
 B.S., B.S., M.D., Northwestern University
- STEELE, EARL** - - - - - Associate Professor of Engineering;  
 Chief—Device Development Department, Motorola Inc.  
 B.S., University of Utah; Ph.D., Cornell University
- STEELE, MONTGOMERIE C.** - - Associate Professor of Engineering;  
 Stress and Vibration Engineer—  
 AiResearch Manufacturing Company of Arizona  
 B.S., University of Glasgow; M.S., University of Illinois;  
 Ph.D., University of Glasgow
- VAN LE, NGUYEN** - - - - Assistant Professor of Engineering;  
 Senior Engineering Specialist—  
 AiResearch Manufacturing Company of Arizona  
 B.S., Columbia University; M.S., Sc.D., Massachusetts  
 Institute of Technology
- WATTERS, CLARE V.** - - - - Assistant Professor of Engineering;  
 Supervisory Engineer—Planning and Statistical  
 Division, Salt River Power District  
 B.E.E., B.B.A., University of Minnesota;  
 M.S.E.E., Stanford University
- WHITE, EMORY** - - - - Assistant Professor of Engineering;  
 Computer Engineer—Computer Department,  
 General Electric Company  
 B.E.E., University of Akron; M.E.E., University of Delaware
- WILLIAMS, O. O.** - - - - Lecturer in Medical Technology;  
 Consultant in Pathology—St. Joseph's Hospital  
 B.S., M.D., Vanderbilt University
- WITT, RICHARD P.** - - - - - Instructor in Engineering;  
 Manager—Computer Engineering, Computer  
 Department, General Electric Company  
 B. Metallurgical Engr., Rensselaer Polytechnical Institute
- YOST, RUSSELL R.** - - - - Assistant Professor of Engineering;  
 Chief Engineer—Motorola Inc.  
 B.S., Haverford College

## Training School

- LEWIS, MAURICE S. (1954) Principal, I. D. Payne Training School;  
Associate Professor of Education  
B.S. in Ed., M.S. in Ed., Drake University; Ed.D., Colorado  
State College of Education
- ASHBY, NANCIE - - - - - Lunchroom Supervisor
- BOETTO, LAUREL B. - - - - - Third Grade  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- BRYAN, RUTH D. (1956) - - - - - Seventh Grade  
B.Ed., M.S., Southern Illinois University
- CROUCH, BEULAH H. (1953) - - - - - Fifth Grade  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- HUGHES, JUANITA C. - - - - - First Grade  
B.A., M.A. in Ed., Arizona State College at Tempe
- MOORE, HOPE C. (1956) - - - - - Shop and Physical Education  
B.A., Arizona State College at Tempe
- MORRIS, MARY SCOTT (1947) - - - - - Art  
A.B., Western Kentucky State College; M.A., Northwestern University
- OLMSTED, CAMERON B. (1956) - - - - - Second Grade  
B.A. in Ed., M.A. in Ed., Arizona State College at Tempe
- PEJSA, PATRICIA T. (1954) - - - - - Kindergarten  
B.E., M.E., National College of Education
- ROBINSON, DOROTHY F. (1927) - - - - - Librarian  
B.A., M.A., University of Southern California
- SEARIGHT, ROLAND (1954) - - - - - Music  
A.B., Grinnell College; M.A., The Eastman School of Music of the  
University of Rochester
- SMITH, GLADYS (1954) - - - - - Fourth Grade  
B.S. in Ed., Fort Hayes Kansas State College;  
M.S. in Ed., University of Kansas
- STANSELL, WILLIAM E. - - - - - Sixth Grade  
B.S., Wisconsin State College at Milwaukee; M.E., Wisconsin State  
College at Superior
- WEAR, GEORGE R. (1954) - - - - - Eighth Grade  
B.A. in Ed., Arizona State College at Tempe

## Matthews Library

- BATCHELOR, HAROLD W. (1943) - - - - - Head Librarian;  
Professor of Library Science;  
Chairman, Department of Library Science  
B.A., University of Oregon; B.S. in L.S., M.S. in L.S.,  
University of Illinois
- ACKLIN, PAULINE (1955) - - - - - Catalog Librarian  
B.A., B.S. in L.S., Texas State College for Women
- ARNHOLD, KATHRYN (1947) - - - - - Loan Service Manager  
B.A. in Ed., Arizona State College at Tempe
- BOGUE, JAMES W. (1956) - - - - - Assistant Librarian  
B.A., Holy Cross College; M.S., M.A., Columbia University
- CORY, LUELLE (1948) - - - - - Catalog and Reference Librarian  
A.B., University of Kansas; B.L.S., University of Illinois  
Library School
- HAARSTAD, WILLIAM A. (1956) - - - - - Reference Librarian  
B.A., M.A., M.S. in L.S., University of Southern California
- HOWE, CHARLES EDWARD (1951) - - - - - Assistant in Cataloging  
B.D., Bexley Hall, Kenyon College
- MAHAFFEY, NINA JEAN (1956) - - - - - Catalog Librarian  
B.S., Indiana University; M.A., George Peabody College for Teachers

- MAXWELL, RUTH (1952) - - - - - Assistant in Cataloging  
B.A. in Ed., Arizona State College at Tempe
- MOFFITT, INEZ W. (1953) - Assistant Professor of Library Science  
B.A., Iowa State Teachers College; B.S. in L.S., University of  
Minnesota; M.A., University of Denver
- MORGAN, FLORENCE B. (1950) - - - - - Catalog Librarian  
B.A., University of Colorado; B.S. in L.S., University of Illinois;  
M.S., Columbia University
- PHILLIPS, RUTH F. (1948) - - - - - Catalog Librarian  
B.S., Cornell College; Library Science Certificate,  
University of Wisconsin
- RUSSELL, ISABEL (1953) - - - Assistant, Curriculum Laboratory  
A.B., Butler University
- RUSSELL, JESSIE C. (1954) - - Curriculum Laboratory Manager  
A.B., Butler College; M.S., Butler University
- SIEDENTOPF, MARIE (1953) - - - - - Acquisitions Librarian  
A.B., University of Montana; Library Certificate, Riverside  
Library School

### Assistants in Administration

- ARAUJO, BEVERLY J. - - - - - Secretary, Placement Center
- ASHLEY, ALETHA - - - Secretary to the Academic Vice President
- \*\*AXEL, BEN JOHN, M. D. - - - - - College Physician
- BAAS, BARBARA - Secretary to Vice President for Business Affairs
- BEATTY, BETTY J. Secretary, College of Applied Arts and Sciences
- BELL, ELLEN - - - - Assistant to Director of Memorial Union
- BELTZ, V. V. - Section Head, Veterans Accounts, Business Office
- BROCK, E. H. - - - - - Director, Physical Plant
- BROWN, LAUREL H. - - - Secretary, Director of Teacher Education
- BROWNING, RUTH - - - - Secretary, Division of Agriculture
- BUNTE, MARY L., M.A. in Ed. - - - - Secretary to the President
- BUSTAMANTE, TONY, B.A. - - - - Manager, College Bookstore
- CARLESON, ERMINDA F. - - - - Secretary, Graduate Division
- CARROLL, MARGARET C. K. - - - - Secretary, Graduate Manager
- CASSITY, GALEN H., M.A. in Ed. - - - - Assistant Registrar
- COLEMAN, LEE W. - - - - Assistant, Information Service
- COLEMAN, SHARON - - - - Secretary, Department of Health,  
Physical Education and Recreation
- CONNOLLY, GRACE - - - - Secretary, College of Education
- COOK, RUTH L., B.A. - - - Head Resident, M. O. Best Hall, Unit I
- COULSON, WILLIAM R., B.A. - Secretary, Scholarship and Student  
Aid
- \*\*DOBBS, LAURA - - - - Office Assistant, Alumni Office
- DUBLIN, ARLENE F. - - - - Supervisor, Mimeograph Office
- EARLE, LOIS PORTER, A.B. - Section Head, Payroll, Business Office
- FIX, RACHEL E. - - - - Film Librarian, Audio-Visual Bureau
- FRITZNER, ANGELA M. - - Secretary, Associate Dean of Students
- FROST, HELEN FULLER - - Secretary, Bureau of Business Services
- GARNATZ, NORMAN - - - - Accountant, Associated Students
- GERSHINOW, BESSIE - - - - Stenographer to Head, Division of  
Language and Literature
- GILLIAM, FRANCES O. - Section Head, Records, Registrar's Office
- GOTTHARD, WARREN F., B.A. in Ed. - - - - Assistant Director of  
Placement Center

\*\*Part Time.

GREEN, MAVIS A., B.A. in Ed. - Section Head, Accounts Payable,  
Business Office

GREGORY, BEATRICE E. - - - - - Head Resident, Matthews Hall

HANNEY, IRENE M. - - - - - Head Resident, La Ramada Hall

HOWLAND, PHYLLIS - Secretary, College of Business Administration

HUNTER, ELMER R., B.S., C.P.A. - - - - Assistant Comptroller

KILBOURNE, RUTH E., B.A. - Assistant to Associate Dean of Students

KOLBERG, ANN J. - Section Head, Admissions, Registrar's Office

KOUNTZ, EDWARD - - - - - Manager, Devil's Den

KRENKEL, MARGARET A. - - - - - Secretary, Registrar's Office

LEONHARD, MARY O. - - - - - Secretary, News Bureau

LORD, RALPH C. - - - - - Military Property Custodian

MARX, E. H. - - - - - Cashier, Business Office

MAY, SIBYL S. - - - - - Clerk, Business Office

McFARLAND, ELAINE, M.N., C.P.H.N. - - - - Director, Student  
Health Service

McKINNEY, NORA E., B.S. - - - - - Bookkeeper, Food Service

MEASON, ANNA FRANCES - - - - - Head Resident, East Hall

MICKELSON, MAURICE - - - - - Head Resident, McClintock Hall B

MIZE, NITA JO - - - - Stenographer, Summer Session, Extension  
and Correspondence

MORRELL, GEORGE W., B.A. - - - - - Purchasing Agent

MUNRO, CLARE W. - - - - - Office Manager, Business Office

MYERS, HAZEL C. - - - - - Secretary, Alumni Office

NICHOLAS, NANCY R. - - - Secretary, Military Science and Tactics

OAKLEY, ALVAH S., JR. - - - Special Agent for Land Acquisition

O'BRIEN, TROY E., JR., M.S. - - Assistant Director, Food Service

PARKER, CLARA N. - - - Head Resident, M. O. Best Hall, Unit II

PEPPLE, JEANE, B.S., B.Lit. - Secretary and Laboratory Technician,  
Student Health Service

PETERSON, MARY F. - - - - - Secretary, Air Science

PHILLIPS, ELSIE W. - - - - - Head Resident, McClintock Hall A

RHONON, DREW - - - - - Section Head, Housing, Business Office

\*\*RICHTER, M. R., M.D. - - - Physician, Intercollegiate Athletics

RISPOLI, FRANK, B.A. - - - - - Graduate Manager

SANDERMAN, IRENE - - - - - Secretary, Radio-TV Bureau

SCHMIDT, HERMAN, B.A. in Ed. - - - Head Resident, Stadium Hall

SCOTT, FRANCES MERY - - - - - Secretary, Special Services

SCOULAR, CECELIA, M.A. - - - - Acting Director, Memorial Union

SHLYK, DOROTHY - - - - - Secretary, Division of Student Affairs

SHUMWAY, DOROTHY H. - - - - - Head Resident, North Hall

SIMS, JOSEPH J. - - - - - Warehouse Manager

STAATS, DONNA - - - - - Secretary, Registrar's Office

STALNAKER, MARGARET F., B.A. - Head Resident, Gammage Hall

STONE, FRED A., JR., B.A. - - - - - Director, Food Service

TEMPLETON, CHARLINE - Secretary to Head, Division of Life Sciences

TROXELL, ROBERT E. - - - - - Director of Housing

VAUGHN, RENE K. - - - - - Head Resident, South Hall

VEDETTE, MARTHA - - - - - Secretary, College Bookstore

WALSH, MARGARET MARY, B.M. - - - Head Resident, West Hall

WANEE, JEFF, B.S. - - - Assistant Manager, College Bookstore

\*\*Part Time.

WEISEND, JOHN P., B.S. - - - Sales Manager, Office of Graduate  
Manager  
WEST, RUTH K. - - - - - Chief PBX Operator  
\*\*WESTERVELT, MARCUS W., M.D. - - Physician, Health Service  
WILSON, ESTHER - - - - - Head Resident, Hayden Hall  
WOODS, MARY H. - - - - - Head Resident, Irish Hall  
WRIGHT, MADELYN - - - Records Supervisor, Registrar's Office

## Assistants in Maintenance

BLALOCK, WALTER S.  
Maintenance of Apartments  
DUPREE, WILLIAM  
Foreman, Carpenter Shop  
GRAY, LENA  
Supervisor of Maids  
HARRIS, FENN  
Superintendent of  
Buildings and Grounds  
HENRIE, WILLIAM E.  
Foreman, Custodian Service

MILLS, ANDREW R.  
Head Mechanic  
SCHWEICKERT, PETER J.  
Foreman, Painters  
SMITH, VICTOR F.  
Engineer, Physical Plant  
SNYDER, WAYNE IVAN  
Refrigeration Technician  
SVOB, ROBERT  
Foreman, Groundsmen



# The College

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## Organization

Arizona State College is an integral part of the system of higher education maintained by the State of Arizona. It is governed by a Board of Regents appointed by the Governor of the State and is supported by legislative appropriations.

The College is organized into four colleges, a graduate division, an extension division, and a summer session.

1. The College of Liberal Arts offers courses in the arts and sciences leading to the degrees of Bachelor of Arts and Bachelor of Science.

2. The College of Education offers courses in kindergarten-primary, elementary, secondary, and special education leading to the degree of Bachelor of Arts in Education.

3. The College of Business Administration offers courses in the various fields of business leading to the degree of Bachelor of Science.

4. The College of Applied Arts and Sciences offers courses in agriculture, architecture, engineering and technology leading to the degree of Bachelor of Science.

5. The Graduate Division administers programs of work offered in the four colleges, leading to the degrees of Master of Arts, Master of Science, Master of Arts in Education, Education Specialist, and Doctor of Education.

6. The Extension Division administers programs of undergraduate and graduate courses in residence centers in Phoenix and other Arizona communities. Courses are also available by correspondence.

7. The Summer Session provides an extensive undergraduate and graduate course offering from each of the colleges during two five-week summer terms.

## History

Centuries before the white man came to Arizona, an Indian culture of significance had been established in Central Arizona. Just a short distance from the present site of Arizona State College at Tempe are remains of a civilization dating back to the eighth century. Here the Ho-Ho-Kam tribe tilled the desert soil bringing life-giving moisture to that soil from the clear waters of the nearby Salt River by an intricate system of brush dams and laboriously constructed canals.

The first white man known to have visited this region must have marveled at the pattern of life the Indians had left behind, for by the time Fray Marcos de Niza came up from Mexico in 1539,

the tribe of Ho-Ho-Kam had vanished, no one knows where. De Niza was soon followed by the colorful but ill-starred expedition of Coronado. Others came, passed on. The desert land was too forbidding for even the most hardy. The Valley of the Sun slumbered.

Almost three centuries passed before courageous, adventure-some white men established permanent homes along the streams and in the mountains of this fabulous land. By 1863, sufficient numbers had gathered within the borders of the region to form the Territory of Arizona. President Lincoln appointed the first territorial governor, John N. Goodwin, who raised the American flag over the Territory, December 29, 1863.

Education in the frontier land progressed slowly until 1885, when on March 12, the Thirteenth Legislative Assembly made provision for the establishment at Tempe of a Normal School. The Normal began classes on February 8, 1886. Thirty-one students met in a single room under the supervision of Hiram Bradford Farmer. The Normal School, forerunner of the present Arizona State College, was the first institution of higher learning to be opened in the State.

The College has had a variety of names starting with Arizona Territorial Normal School and proceeding to Arizona Normal School, The Normal School of Arizona, The Tempe Normal School of Arizona, and the State Normal School of Tempe, Arizona. In 1925, through the activities of the Alumni Association the Seventh State Legislature approved a bill providing that the Tempe Normal School become Tempe State Teachers College and establishing a four-year college curriculum. The Ninth Legislature changed the name of the College to read Arizona State Teachers College at Tempe and authorized the College to grant the degree of Bachelor of Arts in Education. In March, 1937, the Thirteenth Legislature authorized the College to grant the advanced degree of Master of Arts in Education, which degree was conferred the first time on May 31, 1938.

A complete revision of the system of governing the state institutions of higher learning took place on March 9, 1945, when the legislature established a Board of Regents of the University and State Colleges of Arizona, and changed the name of the College to Arizona State College at Tempe. This Board has broad powers. It has authorized new curriculums and courses, and during the past eleven years, has authorized the College to award the Bachelor of Arts and the Bachelor of Science degrees, May 21, 1946, the degree of Doctor of Education, May 25, 1954; the degree of Education Specialist, December 17, 1954; and most recently the degrees of Master of Arts and Master of Science, May 24, 1956.

On May 16, 1953, the Board of Regents approved a limited reorganization of the College and established a College of Arts and Sciences, a School of Education, and Departments of Agriculture, Business Administration, and Industrial Arts and Technology.

Following a study of the state's higher educational program, conducted by the United States Office of Education, the Board, on November 20, 1954, approved the recommendations of the survey committee and authorized the establishment of four colleges, a College of Liberal Arts, a College of Education, a College of Business Administration, and a College of Applied Arts and Sciences.

Thus, the College has had a gradual, positive evolution from the limited curriculum of a Normal School to a strong multi-purpose university institution. From the original single-building campus, there has grown a campus containing fifty buildings on 150 acres and the original attendance of thirty-one has expanded to 6,400 for the academic year of 1956-57.

## Purposes

Arizona State College aims to serve the people of Arizona by providing an over-all educational program appropriately reflecting the community interests of the people of the State as a whole as well as the needs and desires of individual students who enroll. Present institutional objectives which define the educational program of the College are the result of the evolution of the institution over a period of over seventy years.

The original scope of instruction as set forth in the act creating the Territorial Normal School was confined largely to "the instruction of persons . . . in the art of teaching . . .". As the State and the College have grown, that original scope has been expanded until today, operating under the authority of the Board of Regents of the University and State Colleges of Arizona, the College has become a multi-purpose university institution.

The general purpose of the College is to provide means by which all who pass through its doors may become, through increased competence, improved moral and ethical standards, and expanded cultural horizons, better citizens of the state, the nation, and the world.

Attainment of this general purpose is made possible through specific programs of academic and other activities which are designed:

- (1) To provide a basic program of general education.
- (2) To provide programs of work in the arts and sciences at the undergraduate level which broaden and extend the basic program of general education and provide the beginning specialization necessary for advanced graduate and professional education.
- (3) To provide programs for the selection and preparation of teachers and administrators for the elementary and secondary schools of Arizona.
- (4) To provide programs of graduate and professional work in the fields of the arts and sciences, education, business, and engineering.

(5) To provide programs of pre-professional training in accepted professional fields.

(6) To provide a number of less-than-degree programs of a practical type to give students the general education, skills, knowledge, and understanding needed for entrance into the vocations of their choice.

(7) To provide a rich and balanced program of out-of-class activities through the residence halls, student government, professional and special interest groups, organizations, fraternities, and sororities, that provide abundant opportunity for the development of wholesome individual personalities, refined social living, training in leadership and effective citizenship.

(8) To provide a program of help, guidance, and personal counseling that reaches all students.

(9) To provide a program of cultural and educational leadership and service in the community and the state as a whole. These professional and community services are provided through special evening courses, resident credit centers, correspondence courses, summer sessions, educational conferences, dramatic performances, musical concerts, speech clinic services, published bulletins, radio and T-V programs, placement services, alumni organizations, school visitation, speaker and consultant service.

## Recognition by Accrediting Agencies

Arizona State College is fully accredited by the recognized agencies of evaluation in its field. The College is approved by the North Central Association of Colleges and Secondary Schools, and by the National Council for Accreditation of Teacher Education. It has institutional membership in the Association of American Colleges, the American Council on Education, the Western College Association, the American Association of Colleges for Teacher Education, and the National Commission on Accrediting (not an accrediting agency). Students transferring from this College to other colleges and universities are given the same recognition with respect to transfer of credits, graduate study, and other privileges as are enjoyed by other universities and colleges of the country.

## The College Setting

### Environment

*Location.* Arizona State College is located in the City of Tempe in the heart of the Salt River Valley and nine miles from metropolitan Phoenix, the state capital, and one of the fastest growing areas in the nation. Tempe is located on the Southern Pacific Railroad's main line and connections with the Santa Fe Railway are available at Phoenix. Four transcontinental highway systems run by the college grounds, affording easy access to all parts of the country. One of the nation's outstanding airports is located halfway between Phoenix and Tempe and provides frequent serv-

ices via Trans World Airlines, American Airlines, Frontier Airlines, and Bonanza Airlines. The airway's network extends in all directions and there are at least 40 transcontinental flights daily. There is regular metropolitan bus service between Tempe and Phoenix and other adjacent communities.

*Climate.* The great adventure of this country has always been the act of heading West. That holds good today. Only in the West can the classic American combination of frontier informality and a civilization in the making still be found. In Arizona—above all, the district around Tempe—there is the additional blessing of the nation's most perfect climate. Here in the Valley of the Sun, prosperity can be found in a land suited to its enjoyment. Cloudless skies and bright, constant sunshine permit much of the college activity to be conducted outdoors. There is virtually no snow, rain is seldom, and high winds are infrequent.

*Historical and Scenic Features.* Within easy reach are found such exciting landmarks as Apache Trail, Canyon Lake, Roosevelt and Coolidge Dams, Hieroglyphic Canyon and the Casa Grande Ruins National Monument. Somewhat distant in the internationally famous Grand Canyon of the Colorado, one of the Seven Wonders of the World, and scenic Oak Creek Canyon, famed western beauty spot.

The Navajo, Apache and Hopi Indian Reservations are near enough for occasional visits and smaller tribal groups—the Pimas, Maricopas and Yaquis—live but a few miles from the campus. At the Heard Museum in Phoenix and in the original excavations at Pueblo Grande, five minutes from the campus, the superb art of the ancient basket-weavers and Sun-worshipping Ho-Ho-Kam, may be studied.

Majestic mountains fringe the horizon—Camelback, Four Peaks, South Mountain, and the Superstitions, being the most prominent. Papago Park, a natural scenic attraction retaining much of the original desert flora, lies just north of the campus. This beauty spot and its 1200-acre park is an ideal center for hiking, horseback riding, picnicking and painting.

### Grounds

The 150 acres comprising the campus proper, arranged in a most attractive setting with broad, shady lawns and dotted by a profusion of orange, olive, fig, and palm trees, present a veritable oasis in this desert land. Interestingly arranged hedges and a variety of shrubs combine with gayly blooming flowers to give an inviting vista of restful color.

Fifty buildings comprise the main campus. Consistent with a master plan adopted several years ago, all recently completed buildings and those now under construction are finished in light buff brick, a perfect complement to the vivid natural colors of the Southwest. When practical, the same light buff color is used in the modernization of older structures, bringing to the campus scene a warm unity of color. Classrooms and laboratories are

designed with large window areas to take full advantage of the winter sunshine abundant in this area and are decorated in soft, pleasant pastels.

The prospective student must see the tropical fruit and nut trees surrounding the buildings, marvel at the desert's rare coloration, visit the fabulous mountains nearby, and bask in the warm, comfortable climate to really appreciate the campus. It's a friendly, democratic campus, where students from every state in the Union and many foreign countries seek a source of power and happiness—the gold of knowledge for a richer, fuller life.

*College Farm.* The model farm of four hundred acres is located one mile south of the campus. It is used for experimental and practical work in various phases of agriculture.

## College Buildings

### Administration

*Administration Building.* The administrative offices of the College are housed in the north wing of this imposing structure. In it are located the President's Office, Office of the Academic Vice President, Dean of the College of Liberal Arts, Director of Graduate Study, the Registrar's Office, the Business Office, the Division of Student Affairs, the Alumni Office, and other administrative sections. It is especially noted for a magnificent entrance-mural in fresco done by Jean Charlot.

### College Libraries

*Matthews Library.* This modern, fire-proof, air-conditioned building provides outstanding facilities, and a growing collection of materials to meet the needs of undergraduate and graduate students and the faculty. Recently remodeled and enlarged at a cost of more than a half-million dollars, the functional plant and the beautiful decor contribute to make the Library a most attractive, comfortable, and efficient place for intensive study or for casual reading. It is indeed a "great new heart" of the institution. Arranged for subject specialization, there are reading rooms for Education, Humanities, Science and Technology, and the Social Sciences. In addition to these special reading rooms, there are: a well-stocked General Reference Room, a Periodical Room with over fifteen hundred current subscriptions, and a Browsing Room for recreational reading. A splendidly equipped Music Room, a gift of Mrs. Mary Redewill, widow of the late music patron Eugene Redewill, permits students to listen through individual devices, to the finest in classical recordings and F.M. radio programs. There are one hundred and forty individual study carrels available in the stacks. The significant Collection of American Art is hung in the Library's galley and reading room.

*Payne Training School Library.* In addition to the general library, there is a children's library in the Payne Training School. This collection contains more than 5,000 carefully selected juven-

ile books covering all types of literature. The book collection is supplemented by a file of pamphlets, pictures, and other materials; by a selection of outstanding juvenile periodicals; and by a textbook collection for the enrichment of directed teaching as well as for the children's use.

*Curriculum Laboratory.* The Curriculum Laboratory, housed in the new Library Building, is a functional part of the teacher-education program of the College. It is designed to serve teachers in training and Arizona teachers in-service by maintaining extensive collections of teaching materials and curricula.

*Bureau of Audio-Visual Aids.* The Bureau of Audio-Visual Aids is an audio-visual service agency for the instructional program of the College and for the schools of Arizona.

The Audio-Visual Library, valued at more than a hundred fifty thousand dollars, is the largest library of films in the state of Arizona. The films are cooperatively owned by the seventy-one member schools, by Arizona State College, and by a number of government agencies and industries which deposit films in the Audio-Visual Library. These films are available on a rental or free-loan basis to any responsible organization or school in Arizona.

A library of educational radio programs on tape recordings is being developed. Schools wishing to acquire these tape programs may send their tapes to the Audio-Visual Library and obtain any program which the Library has.

The Library maintains and services all audio-visual equipment used by the various College departments.

*Photography Section:* The Photography Section of the Bureau of Audio-Visual Aids handles all of the photography for the College for both instructional and publicity purposes. A group of nine dark rooms and a photographic studio provide facilities for carrying on the work of the Photography Section, and provide laboratory facilities for some courses in photography and the production of audio-visual aids.

In addition to the more usual types of photography, the Photography Section is also equipped for microfilming, student and faculty portraiture, making of identification pictures, making negatives for multilithing, and producing motion pictures with magnetic sound tracks.

*Radio-Television Bureau.* Radio Facilities: The Radio-Television Bureau has in the new Engineering and Technology Center professionally equipped radio facilities made up of three radio studios, a master control room and a sub-control room. The facilities are used for origination of 70 hours of broadcasting each week over KASC, the campus carrier current radio station; recording and origination of college radio programs broadcast over commercial stations; and preparation of recordings for individuals and organizations connected with the college.

**Television Facilities:** The Engineering and Technology Center contains a completely equipped television studio, control room and film room used by the Radio-Television Bureau for the training of students in television skills, and the preparation and origination of College Television programs broadcast over the transmitters of television stations in the area. From these studios originate educational television series designed to extend the facilities of the College to the people of the State.

Also located in the Engineering and Technology Center are the Bureau's offices, KASC office, and production facilities, including a record library, a news room, an art room, and a film projection and editing room.

*The Arizona State College Collection of American Art.* The Collection of American Art, including over a hundred original paintings in oil, water color, and tempera, numerous works of sculpture, and an extensive print collection, is on permanent display in Matthews Library. A dynamic exhibition of art Americana, the Collection is constantly being increased and now lists 180 cataloged items valued at nearly \$500,000. It has earned its place as one of the most significant contributions to the cultural life of the state of Arizona and is gaining recognition as one of the outstanding collections in the Southwest.

Oliver B. James (1896-1955), distinguished citizen in service to his country and to the state of Arizona, was the original donor and founder of the Arizona State College at Tempe Collection of American Art. The worth of his generous gift has since attracted many fine contributions and donations for valued acquisitions, and this noteworthy Collection has superb works by Gilbert Stuart, Sull, Benjamin West, Audubon, Morse, Eakins, Ryder, Winslow Homer, and most of the other American old masters of the 18th and 19th centuries, as well as representative works by great modern masters such as Georgia O'Keefe, Marsden Hartley, John Marin, Speicher, Rattner, Ben Shahn, Tamayo, Tanquy, Roszak, Lipchitz, Calder, Hilda Rebay, Gertrud and Otto Natzler, and many others.

### Classroom and Laboratory

*Agriculture and Business Administration Building.* This is one of the most modern and functional classroom and office structures in the Southwest. It comprises the south wing of the building which houses the administrative offices.

*Arts Building.* This is a recently modernized, fire-proof building of concrete construction faced with brick. It houses the departments of Art, Music, and Social Studies.

*Band Building.* This building is located southeast of the heating plant and is the headquarters for the band. It contains rooms for band rehearsal, ensemble and private practice, instrument storage, and offices.

*Engineering and Technology Center.* The Engineering and Technology Center is the newest structure in the classroom building



program and is opening for technology and engineering instruction in the fall of 1957. The Center, a series of integrated unit-wings, occupies nearly one full block including parking areas. The design includes shops, experimental shop laboratories, and a three-story wing for classrooms and offices.

*English Building.* Classrooms and offices for English and speech are housed in this attractively remodeled structure.

*Farm Buildings.* A home and barns are located on the college farm one mile south of the campus.

*Home Economics Building.* A splendid, completely equipped structure which houses the Home Economics Department has been constructed at the north edge of the campus adjacent to the Arts Building and in close proximity to the Home Management House and Nursery School. This new structure provides the latest facilities for technical courses in homemaking.

*Home Management House and Nursery School.* A fine building in which students majoring in Home Economics live for a part of a year. A modern nursery school is also housed in this building.

*Lyceum Building.* The Lyceum Building has been recently converted to provide office space for the Psychology Department. In addition, the building is devoted to the Research and Testing Service, the Guidance and Counseling Center, the Reading Clinic, and the Psychological Clinic.

*Old Main.* The early traditions of the college cluster about Old Main with its three stories of ivy-covered brick. Erected in 1894, the building has been completely remodeled inside, and new entrance ways have been installed. It is devoted to classrooms and offices for academic work and houses the College of Education.

*Ira D. Payne Training School.* The beautiful Spanish colonial brick building which housed the Training School was destroyed by fire in March of 1956. Temporary classrooms are provided through modification of the old College dining hall adjacent to the former Training School building. Also, three rooms were reconstructed from remnants of the former building which were least affected by the fire. The College has entered into an agreement to purchase the Tenth Street Grammar School site from the Tempe Elementary School District. Plans call for making these facilities available for use for the Training School by February 1958.

*Science Building.* This fine, modern building offers outstanding classroom and laboratory facilities for students in the biological and physical sciences.

*Science Annex.* The two structures directly south of the Science Building house Science Department offices and the Poisonous Animals Research Laboratory.

*Tempe 10th Street Grammar School.* Formerly a part of the Tempe Elementary School system, the grounds and buildings of the 10th Street School were acquired by Arizona State College in 1957. Plans are now being made to relocate the Payne Training School

on this new site following a complete modernization and refurbishing program. The 10th Street School is located on the west side of the main campus.

### Physical Education and Recreation

*Men's Physical Education Building.* The magnificent new Men's Physical Education Building was completed and opened in 1952. It is of the latest type construction, contains ample gymnasium space, classrooms, offices and many other features which make it outstanding. The basketball area will ultimately provide seating for 6,000 spectators. The classrooms and offices of the Department of Military Science and Tactics are located on the second floor of this building. The drill area is located immediately in rear of the gymnasium.

*B. B. Moeur Activity Building.* This is the instructional center for women's physical education. The building was named in honor of the late Governor Moeur.

*Goodwin Stadium.* The stadium was named after the late Garfield A. Goodwin, an early graduate of the Territorial Normal School, and a member of the Board of Education for many years. The west unit has a seating capacity of over 4,000. Another unit located on the east side of the field increases the seating capacity about 7,000. Additional bleacher seats allow 16,200 persons to be seated.

*Swimming Pool.* Ready for use in mid-1957, the swimming pool is the newest facility to be added to the Physical Education departments at Arizona State College. The pool is located just east of the Men's Physical Education Building. It is of heavy concrete construction and is equipped with the most modern high-volume water filtering and purification system. Dressing facilities for men and women, part of the new construction, are adjacent, and spacious concrete deck areas surround the pool.

### Residences

*President's Residence.* This is a substantial, two-story, brick structure located on the east side of the campus.

*North Campus Cottage.* An attractive brick home occupied by a staff member.

*Science Annex.* A brick cottage used as a research center.

### Residence Halls

*Adelphi Housing* Five units of a most attractive development for men have recently been completed on a fifteen acre site three blocks southeast of the campus. Each unit houses thirty students and contains a living-dining room and kitchen. They are occupied by recognized student groups and organizations.

*Alpha Hall.* Used as a temporary residence hall for women until permanent resident hall assignment is made, Alpha Hall is the Panhellenic Center for the College. Headquarters, chapter rooms,

and living accommodations for national sorority members are maintained here.

*Carrie J. Matthews Hall.* This hall for women was named after Carrie J. Matthews, the wife of former president Arthur J. Matthews.

*North Hall.* This women's hall is located on the north side of the residence hall quadrangle.

*South Hall.* South Hall accommodates women. It is located on the south side of the residence hall quadrangle.

*West Hall.* This fine, large residence hall for women is located on the west side of the residence hall quadrangle.

*Dixie Dees Gammage Hall.* This is a modern structure for women. The hall was named in honor of Dixie Dees Gammage.

*James H. McClintock "A" Hall.* Formerly called Gammage Annex, McClintock "A" was the first half of this apartment-type residence hall to be constructed. Attractively up-to-date, this hall provides accommodations for ninety-six women.

*James H. McClintock "B" Hall.* The newest section of McClintock Hall, "B" provides accommodations for 128 women. The hall features a central patio, living room, kitchen, and sunbathing area.

*George W. Wilson Hall.* Completed in 1956, Wilson Hall provides a fine measure of tasteful modernity with a home-like atmosphere for 148 women. It is located directly west of Danforth Chapel in mid-campus.

*Palo Verde Hall.* Newest of the women's residence halls, Palo Verde is expected to be completed during the 1957-58 school year. It will accommodate 450 women, and features the most modern facilities for on-campus living. The hall is located at the north end of the campus and offers a separate cafeteria for resident's use and ample parking facilities.

*East Hall.* This residence hall for men is located at the center of the campus.

*Irish Hall.* This is a three-wing unit located just west of Goodwin Stadium, and houses 153 men.

*M. O. Best Hall.* Two hundred men are housed in this completely modern, two-wing unit opened for the first time in 1956. The units face a park area and are located west of Irish Hall.

*Sahuaro Hall.* Expected to be opened in the 1957-58 school year, this most modern of the men's residence halls is designed for 350 men. It is located three blocks southeast of the main campus and features a self-contained cafeteria unit.

*Charles Trumbull Hayden Hall.* A new men's residence hall accommodating 146 students has been constructed on the south edge of the campus, facing federal highways. It is modern in construction and contains many conveniences and facilities for pleasant living.

*La Ramada Hall.* Used as a temporary residence hall for men until permanent resident hall assignment is made, La Ramada Hall consists of two frame buildings obtained from the United States Government.

*Charles A. Haigler Hall.* This dormitory provides accommodations for twenty-two men and is located underneath the east section of Goodwin Stadium.

*Victory Village.* In this village there are about 66 apartments for the accommodation of veterans and their families.

*Palm Grove.* These apartments are located one mile south of Tempe and will accommodate 16 families.

### Student Services

*Memorial Union.* The center of student life on campus is the magnificent new Memorial Union Building, located on the south-east corner of the main campus intersection and near to classrooms, residence halls, and all activity centers. A large part of the financing which made the Union possible came through contributions from faculty, alumni, students, and friends of the College. Formally opened and dedicated in the spring of 1956, the Union provides space and the most modern facilities for recreational, cultural, and social activities of the students and faculty.

On the ground floor of the Memorial Union are located the spacious College Cafeteria, the snack-room, known as the "Devils' Den," the efficient, self-service College Bookstore, the campus post-office, and a comfortable lounge. Recreation rooms providing space for table tennis, billiards, bowling, and hobbies and crafts are located in the basement. On the second floor is the luxurious main ballroom opening onto the Starlight Terrace, as well as a student lounge, several banquet rooms, committee rooms, a well-equipped soda bar adjacent to the ballroom, offices of the Associated Students of Arizona State College, and complete editorial facilities of student publications, including the office of Sahuaro, the College yearbook, and the editorial and advertising office and the news room of the State Press.

The Memorial Union is, in fact, more than just another building on campus. Every element in its design was chosen to reflect the social, cultural, and recreational life at Arizona State, and to enrich all students generally and each student individually. Thus, this imposing structure brilliantly fosters the real campus spirit with a constantly growing program of activities and events supervised and administered by a competent director of the Union, working with the Cultural Affairs Committee, the Social Committee, and the committee on traditions. The Memorial Union Program, as it is called, is alert to the needs of students and is receptive to their requests and suggestions. In the short space of time since it has been opened, the Memorial Union, with its luxurious furnishings, its striking decor, and its colorful offices and recreational rooms has become literally, a "Building-in-motion," and a

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beautiful, living tribute expressed in its dedication: "To Students, Faculty, and Alumni who served in defense of our country."

*Student Health Center.* An expanded and reconstructed College Health Center was opened for service in mid-1953. This building, located in a quiet section on the east side of the campus, provides most adequate facilities to care for the health needs of college students.

*Danforth Meditation Chapel.* A chapel for devotions by individuals and small groups made possible by a gift of \$5,000.00 by William Danforth supplemented by gifts from numerous students, faculty, and friends of the college.

### Maintenance

*Maintenance Building.* This new building located just north of the Men's Physical Education Building is the center for the receiving, storage, and disbursement of all supplies and equipment. The switchboard and the mimeograph office are located here.

*Heating Plant.* The plant is located centrally just south of the dining hall. It furnishes steam heat and hot water to all college buildings.

# Entrance Information

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## Admission to College

### General Requirements

*Personal Qualities.* Arizona State College desires to admit only persons possessing good character, and serious purpose. They should possess such degree of health that success in the vocation selected may be expected. In addition, candidates for the professions should rank high in personality traits including native ability.

*Transcripts.* Before any student may register for work in the regular sessions of the College, and be admitted to regular standing and classification, his transcripts of high school and previous college work must be on file in the Office of the Registrar and Director of Admissions. Students should request the high school principal or college registrar to mail the transcript directly to the Registrar and Director of Admissions. Transcripts should be in the hands of the Registrar and Director of Admissions at least thirty days in advance of the registration date. Transfer students whose transcripts are not received by this date may experience difficulty in planning course programs with curriculum advisers. Transcripts are not required at the time of registration of those taking work in the summer session, in extension, or by correspondence.

All transcripts or credentials submitted from other institutions become the property of Arizona State College. Neither the originals nor copies will be released from the files. When duplicates are required students should obtain new transcripts from the issuing institution. At the discretion of the administration of Arizona State College admissions credentials and transcripts will be destroyed.

*Health Examination.* A health examination is required, prior to registration, of all students attending regular session and carrying more than 5 semester hours. This is given without charge by the Health Service staff. Late registrants must secure the examination form from the Student Health Service, and have it completed by an M.D. Such students pay the cost of the medical examination. A physician's certificate of small pox vaccination within the past four years must be furnished at the time of the health examination.

A chest X-ray, to be interpreted by a roentgenologist, is required without exception of all students at a time to be announced by the Student Health Service. Any student who fails to have an X-ray at this time must bear the cost of having it done later.

*Aptitude Tests.* Several aptitude tests are required of all *new students before registering* with the following exceptions: those registering for not more than five semester hours of work, sum-

mer session students, extension students, and those taking late afternoon, evening or Saturday classes only. These tests have nothing to do with a student's entrance. They are used for student guidance. They require several hours; therefore, a new student cannot complete his tests and registration in one day. Students whose score falls below a critical point in the English achievement test will be required to take Eng. X to improve their reading and study skills before registering for Eng. 101. See the section headed, "The College Guidance Program" for description of tests.

### High School Graduates

Graduates of an approved high school may be admitted to freshman standing in any of the curriculums offered by the College.

The units listed below are specified for admission. To meet these specifications, credits will be accepted for any subjects in these fields usually given in high schools. In addition, credits will be accepted for general or unified courses, irrespective of the names or organization of the courses, provided the subject matter covered falls within the fields specified.

English .....	3 units
Social Studies .....	2 units
Mathematics (Arithmetic is accepted) .....	1 unit
Science .....	1 unit

Graduates of an approved high school who wish to be admitted to the Division of Engineering as freshmen should present 15 units of secondary school work distributed as follows:

English .....	3 units
History or Social Studies .....	2 units
Algebra .....	1½ units
Plane Geometry .....	1 unit
Solid Geometry, Trigonometry or Advanced Algebra .....	½ unit
Physics .....	1 unit
Chemistry .....	1 unit
Additional work in any of above subjects .....	3 units
Other high school subjects .....	2 units
	—
	15 units

A student presenting other or fewer credits than those listed above may be requested to take additional preparatory work without degree credit.

### Conditional Admission

*Graduates of Unapproved High Schools.* Graduates of unapproved high schools may be admitted provisionally upon passing satisfactorily the regular aptitude tests. Provisional admission will be removed on the successful completion of the first thirty semester hours of college work.

### Non-Graduates of High Schools

1. *High School Seniors.* High school seniors under 21 years of age with only a limited amount of work to complete in order to meet the requirements for the high school diploma may be admitted under the following conditions:

- (a) A plan for completing high school work with the written recommendation and approval of the high school principal, and an affirmative vote of the Admissions and Standards Committee.
- (b) The completion of high school graduation requirements prior to the admission to sophomore standing.

2. *Adult Civilians, and Veterans Over 18.* Civilians over 21 years of age, and veterans over 18 years of age who are not graduates of approved high schools may be admitted to undergraduate standing with conditions. These conditions may be removed during the second year in college as follows: (a) complete at least 60 semester hours with an index of 1.75 or better. (b) an affirmative vote of the Admissions and Standards Committee.

### Special Information for Veterans

Arizona State College is fully accredited by the Veterans' Administration. Veterans will follow the procedures outlined above under the heading, "Admission to College." In addition, veterans will observe the following special procedures:

1. Veterans not previously in training under the G.I. Bill will obtain from the Veterans' Administration, Regional Office, Phoenix, Arizona, a Certificate of Eligibility and Entitlement to attend Arizona State College.

2. Veterans previously in training under the G.I. Bill will obtain from the Regional Office nearest the institution which he last attended a supplemental Certificate of Eligibility and Entitlement.

3. Veterans will deliver these certificates to the Veterans' Accounts Officer at the College in person at the time of registration.

4. Veterans must submit their records of service in the Armed Forces (photostatic copy of discharge and/or separation notice) with a notarized *Application For Evaluation* to the Admissions Office as a part of their admissions credentials. Advanced standing credit will be granted on the basis of these records only if application is made at the time of matriculation at Arizona State College.

5. Only advanced standing credit will be recognized where credit is granted on the basis of G.E.D. examination, i.e., the student who presents official records of having successfully passed the college level G.E.D. examinations as a part of his admissions credentials may be granted credit as recommended by the American Council on Education Guide Book. Such credit will be granted upon admission, if the G.E.D. tests were taken during the time the student was a member of the armed services. Credit based on G. E.D. examinations taken after discharge from the armed services



will be granted upon admission only after the merits in each individual case have been considered.

In no instance will credit be granted on the basis of G.E.D. examinations when such examinations have been taken after the student has been admitted to the Arizona State College at Tempe or other college or university. The purpose of granting credit based on G.E.D. examinations is to recognize educational training and experience acquired while serving in the armed forces in the case of those individuals whose educational program was interrupted or delayed by virtue of that period of service.

6. Veterans desiring to enter R.O.T.C. so as to qualify for a commission in the Army or Air Force should contact the Professor of Military Science and Tactics or Professor of Air Science prior to registration. Veterans receiving commissions through the Army R.O.T.C. programs are required to serve only six months active duty and a total of four years in the Reserves following date of commission.

7. Veterans must be in continual attendance in training after July 25, 1951. Changes of course and/or place of training must be applied for while the veteran is in actual attendance in a college or university. Failure to comply with either of the above may result in the forfeiture of remaining entitlement by the Veterans Administration.

### Admission with Advanced Standing

1. Students from approved institutions of higher education will be given credit, hour for hour, for work done in these institutions insofar as it applies to the requirements of the curriculum pursued at Arizona State College. The number of units in barely passing grades credited to students admitted to advanced standing may not exceed 20 per cent of the total number of units completed. This applies to records in separate institutions when the transfer has attended more than one. Grades and scholastic honor points earned at other colleges and universities are not recorded on the student's permanent record.

"A Guide to the Evaluation of Educational Experiences in the Armed Services," published by the American Council on Education, has been adopted by Arizona State College as the basis for evaluating training and experience in the armed forces.

2. Failure to report previous college attendance at the time of registration is sufficient cause for cancellation of the student's enrollment, of any credits earned, or both.

3. Students who are disqualified in another college because of scholarship, conduct, or any other reason will not be admitted until such disqualification is removed. Students must furnish evidence of good standing and that they are eligible to return to the institution last attended. Students whose scholarship records at other institutions are below the standards required for good standing at Arizona State College are not eligible for admission.

4. Experienced teachers who become candidates for the bachelor's degree may be permitted to substitute academic credits for a part, or, in some cases, all of the required directed teaching, but no academic credit is allowed for teaching experience. A student who wishes to have directed teaching waived must file a petition and letters of recommendation from principals or superintendents with the Director of Teacher Training.

5. Junior-college students planning to transfer to Arizona State College at the end of their first or second year should plan their junior-college courses to meet the requirements of the curriculum selected. Loss of time often results from failure to do this. Junior college transfer students will be permitted to follow the degree requirements specified in the Arizona State College catalog in effect at the time they began their junior college work providing their college attendance has been continuous.

Credits transferred from accredited junior colleges will be accepted up to a maximum allowed by Arizona State College for the first two years in the curriculum under which the student graduates. Courses transferred from junior colleges will not be accepted as upper division credit at Arizona State College.

Courses offered by the Tempe Religious Conference, Tempe, and approved for transfer are accepted for general elective credits by Arizona State College.

### Admission to Summer Session

Excepting those who plan to complete the degree requirements in summer sessions only, students will be admitted to the summer session without presentation of transcripts.

## Registration

*Registration Dates.* Students should register on the registration dates announced in the College calendar. New students cannot complete the required aptitude and health examinations and finish registration in one day. Students registering late will be charged a late registration fee. Residence halls will be open to students on the dates scheduled in the College calendar.

*Prerequisites to Registration.* Before registering in the regular sessions, all students seeking admission must file transcripts of high school or college work, or both, and take the aptitude and health examinations required under the heading, "Admission to College." In addition, students must meet special requirements given hereafter. Undergraduate students file applications for admission and transcripts in the Office of the Registrar and Director of Admissions. Graduate students file theirs in the office of the Director of Graduate Study.

*Classification of Students.* Freshmen are those students enrolled in a regular curriculum who have acquired less than 30 semester hours of credit; sophomores, those with 30 or more semester hours, but less than 62; juniors, those with 62 or more, but less

than 94; seniors, those with 94 or more; graduate students, those holding a bachelor's degree from Arizona State College at Tempe, or any other recognized institution. Special students are those who are not enrolled in any curriculum leading to a degree but who desire instruction in subjects of special interest to themselves.

*Curriculum Advisers.* Before entering college a student should study the curriculums outlined in order to determine the curriculum best suited to his interests and needs. Before registering, each student must select, tentatively at least, a curriculum. The designated curriculum adviser will counsel with the student regarding his proposed curriculum, his choice of courses, and approves both. He advises him as needed throughout his stay in college.

*Course Loads.* Students carrying twelve or more semester hours of work are classified as full-time students for college classification purposes. *Students attending college under the benefits of Public Laws 346 or 16 must be registered for a minimum of 12 semester hours for G.I. benefit and subsistence purposes. Students attending under the Korean G.I. Bill of Rights must be registered for a minimum of 14 semester hours to be classified as a full-time student for G.I. benefit and subsistence purposes. Male students to qualify as full time college students for Selective Service classification purposes must be registered for and complete, each semester, one eighth of the number of semester hours required for a degree. Thus, male students subject to the draft must be registered for and complete sixteen semester hours each semester.*

Students may not be registered at any other college or university or in a Residence Center when in regular attendance here unless approval has been granted by the Admissions and Standards Committee. The maximum load for which a student may register is 17½ semester hours, except for students enrolled in engineering programs. The maximum load for engineering students is 19 semester hours. Students who wish to register for more than these maximums must petition the standards committee of the college in which they are registered. Freshmen and lower division transfer students attending Arizona State College for the first time will not be permitted to carry an overload. Students having a low scholarship record may be required to carry a light load. Students carrying a full-time school job will be asked to carry a light load unless their previous records in scholarship and on aptitude tests are high. During the semester in which a student is registered for student teaching, the load should not exceed 16 semester hours.

*Planning the Schedule.* The schedule of classes covers both morning and afternoon hours, Monday, Tuesday, Wednesday, Thursday, and Friday, and morning hours only on Saturday. Full-time students are expected to devote both mornings and afternoons to their program of studies. They should not plan to take classes mornings only, or afternoons only, or less than five days per week.

*Course Restrictions.* Freshmen may not register for courses numbered "200" and above unless they have met the designated prerequisites.

*Freshman Registration.* Freshmen, including transfers with 29 semester hours or less of credit, registering for the *first semester*, are expected to be present at all events scheduled for Freshman Week as shown in the college calendar. Failure to attend any meeting may delay the student's registration. See the section on the preceding page headed "Curriculum Advisers."

Freshmen, including transfer students with 29 semester hours or less of credit, registering the *second semester*, will report to Bus. Adm. 203 at 9:00 A.M., Monday preceding the registration dates, and complete their aptitude examinations. Health examinations will be given on Tuesday and Wednesday. Those arriving late will be delayed in registering and will be charged late fees.

*Registration of Sophomores, Juniors, and Seniors.* Sophomores, juniors, and seniors registering in the regular session for the first time the *first semester* will obtain their registration materials according to the college calendar. They will report for aptitude tests as scheduled on the registration week program. This will enable them to complete their aptitude and health examinations and complete registration before the end of registration week. Those failing to do so will be charged the late fees.

For the *second semester* sophomores, juniors and seniors registering in the regular session for the first time will report for the aptitude and health examinations as scheduled on the registration week program. Those coming later will be delayed in registration and will be charged the late registration fee.

*Registration of Graduates.* Aptitude tests are not required of graduate students, but the health examinations are; therefore, such students should allot themselves a full day to complete these examinations and registration.

*Auditors.* Persons wishing to audit courses will register in the regular manner and pay the regular fees. Audited courses carry no credit. Courses audited count toward the student's load. Students once registered for "audit" are not permitted to change to "credit" (and vice versa) after the close of the drop-add period.

*Comprehensive Examinations.* The purpose of the Comprehensive Examination is to permit the student an opportunity to establish credit in a field in which he has had adequate preparation or experience, but in which he has not received academic credit. To provide a procedure by which this may be accomplished, the following rules are applicable:

Comprehensive examinations may not be taken in any course for which the student has received admission or transfer credit from any educational institution. Admission and transfer credit are established through the Admissions Office.

Comprehensive examinations may not be taken in the elementary level of a field in which the student has received credit for advanced work. This includes the prohibition of comprehensives in courses required as prerequisites for a course in which the student has received credit.

Students desiring credit by comprehensive examination should indicate their desire to take such examinations during their first two semesters in residence at Arizona State College. No comprehensive examinations will be given to students who have accumulated 100 or more semester hours of credit.

A student may establish a maximum of 16 semester hours of credit by comprehensive examinations and/or correspondence courses.

Only matriculated students regularly enrolled in the academic year, (not including summer sessions) may petition to establish credit by examination.

Applications will be accepted only for courses listed in the current college catalog, *and only for courses in which a comprehensive examination is regarded as a satisfactory measure of accomplishment.*

The fee for such examinations shall be \$7.50 per semester hour of credit. An examination may cover only one course. For example, English 101 and 102 are two courses requiring separate examinations. No examination will be prepared until the fee is paid.

An application will be filed with the Academic Vice President giving the title, catalog number, and the number of semester hours of credit for the course in which an examination is desired; a statement showing the preparation or background the student has had in this course; and a statement by the head of the department concerned recommending that the student be allowed to take an examination.

Ordinarily, an application will be approved for only one course at a time. If a student applies for examinations in sequence of two closely related courses, such as English 101 and 102, permission may be granted to take the second examination upon successful completion of the first.

The number of hours of credit granted shall be the hours specified for the course in the current catalog.

All examinations shall be of a comprehensive type. They shall be prepared by the instructor of the course, approved by the head of the department, graded by the instructor and the head of the department concerned, and filed in the Records Office.

Examinations will be administered through the office of the Academic Vice President.

Letter grades of A,B,C,D, and E will be used in grading examinations. If the grade is A,B or C, a grade of CR. will be entered on the student's permanent record. If the grade on the examination is D or E, no entry will be made on his permanent record. Entries on the permanent record of credit by examination shall be so indicated. The student will be notified of the result of the examination. The student will not be given a second opportunity to establish credit by examination for the same course.

*Late Registration.* Late registration fees are charged beginning the day class instruction begins. Registration for the first semester is closed Monday of the second week of classes. Registration for the second semester is closed Thursday of the second week of classes.

*Incomplete Registration.* Registration is not complete until all fees have been paid and all required examinations have been taken. Failure to satisfy any of the admission or registration requirements is sufficient cause for dropping a student from all classes.

*Changes in Registration.* Programs should be carefully planned under the guidance of the curriculum adviser so that changes in registration will not be necessary. After a student has completed his registration, changes may be made only through the Registrar's Office by means of a Drop-Add card. Changes may be made as late as Monday of the second week of the first semester. Changes may be made as late as Thursday of the second week of the second semester. After these dates courses may not be added except that a student may change to a more elementary or a more advanced course in the same subject matter field at any time within the first six weeks with the written approval of the instructor and the Dean of the College in which the course is offered.

*Dropping Courses After the Close of Registration.* The courses for which a student is registered at the close of the late registration period constitutes his official registration and semester load. A student may drop a course from his official registration any time up to six weeks prior to the beginning of the final examination period. Subsequent to that date a student may drop courses only if he officially withdraws from college. To drop a course after the close of registration, the student will obtain from the Office of the Registrar and Director of Admissions an Authorization for Dropping Course form. The procedure for dropping a course is as follows: (1) Obtain the approval signature from your curriculum adviser. (2) Obtain the approval signature of the Dean of the College in which you are registered. (3) Obtain the approval signature of the instructor for the course you are dropping. (4) Obtain this signature approval of the Dean of Students (men) or the Associate Dean of Students (women). (5) Obtain the approval of the Cashier in the Business Office at the time you pay the fee for dropping course. (6) Obtain the signature approval of the Veterans Accounts Office if you are attending under any of the G.I. programs. (7) Take the Business Office receipt and the Authorization for Dropping Course form to the Office of the Registrar and Director of Admissions. An official drop notice will be sent to your instructor from the Office of the Registrar and Director of Admissions after the drop card has been filed. The drop notice is attached by the instructor to the student's class card and a final semester grade of W or E will be reported by the instructor at the end of the semester.

*Withdrawal from College.* Students who find it necessary to withdraw from college should withdraw officially. Failure to do so may result in marks of E in all classes. The withdrawal procedure is as follows: (1) Obtain a withdrawal card from the Office of the Registrar and Director of Admissions. (2) Obtain approval signature of the Dean of the College in which student is registered. (3) Obtain the clearance approval of the Dean of Students (men) or the Associate Dean of Students (women). (4) Obtain the clearance approval of the Student Health Service (if withdrawing for health reasons). (5) Women students obtain the clearance approval of the Women's Physical Education Department. (6) Men students registered for R.O.T.C. obtain clearance approval of the R.O.T.C. Department. (7) *Veterans only* obtain clearance approval of the Veterans Accounts Office. (8) All students obtain clearance from the Library. (9) Return the official withdrawal card to the Office of the Registrar and Director of Admissions and the withdrawal clerk will accompany you to the Cashier in the Business Office. An official drop notice is sent to instructors from the Office of the Registrar and Director of Admissions after the drop card has been filed. The drop notice is attached by the instructor to the student's class card and a final semester grade of W or E will be reported by the instructor at the end of the semester.

Unless the student withdraws officially, he is regarded as registered in all courses and runs the risk of receiving E grades in all subjects at the end of the semester. If a student is unable personally to withdraw officially as prescribed above because of illness or other reasons, he should notify the Registrar and Director of Admissions in writing without delay and request that he be officially dropped and that his instructors be notified.

# Financial Assistance and Awards

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## Scholarships and Fellowships

### Arizona State College at Tempe Scholarships

The Board of Regents of the University and State Colleges of Arizona has created a number of scholarships which are awarded annually by Arizona State to new and currently enrolled students who meet the qualifications established by the Regents. The financial need of applicants will be one of the factors considered in selecting recipients of many Arizona State College at Tempe Scholarships. These scholarships, limited in number, include the following:

*Academic Scholarships.* These scholarships are available to students who give promise of high scholastic achievement. They provide for the remission of regular registration and class fees and, in the case of out-of-state students, non-resident tuition.

*Reservation Indian Scholarships.* Two four-year scholarships are awarded annually to Arizona Reservation Indians who have demonstrated ability in the fields of scholarship and leadership. These scholarships cover regular registration and class fees for four years.

*Art Scholarships.* Two scholarships, covering regular registration and class fees and, in the case of out-of-state recipients, non-resident tuition, are awarded by Arizona State each year through National Scholastic Art Awards to high school seniors who win this honor at the national competition held annually following forty-one regional exhibitions, to which students submit their portfolios. Application forms may be obtained by writing (not later than January of the year of graduation from high school) to National Scholastic Art Awards, 33 West 42nd Street, New York 36, New York. These scholarships are renewable annually for four years on the basis of continued achievement.

*Foreign Student Scholarships.* Graduate and undergraduate scholarships are available to qualified students from foreign countries who have previous satisfactory scholastic records and show promise of achievement in promoting good international relations. These scholarships cover regular registration and class fees and non-resident tuition. The ability to read and speak the English language is required.

*Activity Scholarships.* These scholarships are available to new and currently enrolled students who give promise of satisfactory scholastic achievement, of outstanding success for skills or talent in the institution's program of approved activities, and of develop-



ing desirable qualities of character and leadership. Freshmen must have graduated in the upper two-thirds of their high school classes in order to be considered for these scholarships. The scholarships listed immediately below make up the category, "activity scholarships." Although the promise of superior performance in extra-curricular activities is one of the factors considered in awarding these scholarships, the recipients must, nevertheless, have met the fundamental requirement of academic ability.

**Athletic Scholarships.** These scholarships provide for the remission of regular registration and class fees and, in the case of out-of-state students, non-resident tuition. In addition, recipients of these scholarships may qualify for room and board awards under the Sun Angel Scholarship Fund listed elsewhere in this section.

**Band Scholarships.** These scholarships provide for the remission of regular registration and class fees and, in the case of out-of-state students, non-resident tuition. A limited number of them also provide for the remission of fees for private music lessons. In addition, recipients of these scholarships may qualify under the Phoenix Junior Chamber of Commerce Band Scholarship Fund or the Sun Angel Scholarship Fund for awards to help defray the cost of room and board.

**Choral Scholarships.** These scholarships provide for the remission of regular registration and class fees and, in the case of out-of-state students, non-resident tuition.

**Orchestra Scholarships.** These scholarships provide for the remission of regular registration and class fees and, in the case of out-of-state students, non-resident tuition. In addition, they may provide for the remission of fees for private music lessons.

**Voice and Piano Scholarships.** These scholarships provide for the remission of fees for private music lessons. Two of them may also remit the non-resident tuition fee.

**Women's Physical Education Scholarships.** These scholarships provide for the remission of regular registration and class fees.

All the **Arizona State College at Tempe Scholarships** listed above may be renewed annually upon re-application by the student and approval by the Scholarship Committee.

### Sponsored Scholarships

The scholarships listed below have been created by sources other than the Board of Regents but are offered through the College.

**Harold A. Alpert Art Scholarship.** A \$100.00 scholarship is awarded annually by Harold H. Alpert to an outstanding junior or senior art major. Selection will be made by the faculty of the Art Department on the basis of demonstrated ability and need for financial assistance.

*Elenore Altman Scholarship.* One scholarship is given each year by the Arizona Federation of Music Clubs to an A.S.C. student majoring in piano. The scholarship defrays all fees for one year's study of piano.

*Altrusa Home Economics Scholarship.* The Chandler-Mesa-Tempe branch of Altrusa International presents yearly a \$100.00 scholarship to an outstanding high school graduate from Chandler, Mesa or Tempe enrolling in home economics at Arizona State. Selection is made on the basis of need, scholarship, character, and leadership.

*American Association of University Women Scholarship.* The Tempe branch of the American Association of University Women usually awards a tuitional scholarship to an A.S.C. freshman woman who has a record of high scholastic achievement.

*American Institute For Foreign Trade Scholarship.* The American Institute for Foreign Trade awards annually a tuition-free scholarship to a male graduate of Arizona State College at Tempe. This scholarship is valued at \$850.00 and covers the total tuition for a full year at the American Institute for Foreign Trade. In making the award, the following qualifications will be given consideration: (a) quality of scholarship throughout the undergraduate years, (b) personality and character, (c) genuine interest in living and serving abroad, (d) professional background, (e) business experience, and (f) financial need. Preference is given to men who are from 25 to 32 years of age.

*American Institute of Architects Scholarships.* The Central Arizona Chapter, American Institute of Architects, offers two scholarships of \$150.00 each annually to students in architecture. The scholarships are awarded to the juniors or seniors who have demonstrated greatest ability and promise in their work of the previous year.

*Arizona Congress of Parents and Teachers Scholarships.* Scholarships of \$100.00 are awarded by the Arizona Congress of Parents and Teachers to graduates of Arizona high schools planning to enter Arizona State in the teacher training program. Primary consideration in awarding these scholarships are promise of a successful teaching career, above average scholarship and financial need.

*Arizona Dairy Technology Society Scholarship.* The Arizona Dairy Technology Society annually awards a \$225.00 scholarship to an outstanding Arizona State College full-time junior or senior student enrolled in the Division of Agriculture with a primary interest in dairying. The award is based on interest in the field of dairy manufacturing, scholarship, leadership, character, and financial need. Preference will be given to residents of Arizona.

*Arizona Education Association Scholarships.* The Arizona Education Association annually makes available two scholarships of \$350.00 each to junior or senior Arizona State education students. Recipients must be legal residents of Arizona. To be considered

in the selection are professional attitude and leadership, character, financial need, and general worthiness.

*Associated Women Students Scholarship.* This \$100.00 scholarship is awarded by the Associated Women Students of Arizona State to an Arizona high school senior girl, outstanding in scholarship, personality, and extra-curricular activities.

*Blue Key Scholarships.* The Arizona State College Chapter of Blue Key awards a number of scholarships to male graduates of Arizona high schools. These scholarships provide for the payment of registration fees, R.O.T.C. uniform deposit, and books. The awards are made on the basis of scholarship, character, participation in extra-curricular activities and need. The scholarship may be renewed for the sophomore year.

*Borden Agricultural Scholarship.* An annual scholarship of \$300.00 is provided by the Borden Company Foundation, Incorporated, to the senior student in agriculture who has achieved the highest average grade of all similarly eligible students in all college work preceding their senior year. To be eligible, the student must have included in his curriculum at least two dairy courses in the period of his studies prior to the beginning of the scholarship.

*British Marshall Scholarship.* In gratitude for Marshall Plan Aid, the British Government annually offers 12 scholarships at British universities to graduates of U. S. colleges and universities. Arizona State students are eligible to apply in their senior year. Selection is made on the basis of distinction of intellect and character. The scholarships are valued at from 550 to 800 pounds a year.

*Creighton Scholarship.* The Creighton Teachers annually offer a \$100.00 scholarship to a graduate of the Creighton Schools in Phoenix who is preparing at Arizona State for the teaching profession. The recipient must be a junior or senior and will be selected on the basis of professional attitude and leadership, character, financial need, and general worthiness.

*Danforth Graduate Fellowships.* Approximately 50 fellowships for study at accredited graduate schools in the U. S. are awarded yearly by the Danforth Foundation to young men preparing for careers in college teaching. Senior men at Arizona State may apply for these fellowships, which carry maximum annual grants of \$1800 for single fellows and \$2400 for married fellows, with an additional stipend for children. The Foundation is looking for men with outstanding academic ability, personalities congenial to the classroom, and integrity and character, including serious inquiry within the Christian tradition.

*Dumos Club Agriculture Scholarship.* The Dumos Club offers a \$300.00 scholarship to an incoming male freshman at Arizona State who will major in agriculture with an interest in farming. The recipient must be a resident of Maricopa County, Arizona. Primary basis for selection is financial need.

*Eastern Star Scholarship.* The Grand Chapter of the Order of Eastern Star of Arizona awards annually a \$200.00 scholarship to a graduate of an Arizona high school. The scholarship is awarded to a junior or senior in college. The recipient must be a member herself, or the daughter of a member, of a regularly chartered chapter of the order of Eastern Star in Arizona. In selecting the recipient, character, leadership and scholarship will be given primary consideration.

*Fulbright Scholarships.* These are awards made by the U. S. Government for graduate study in 31 foreign countries. Arizona State seniors are eligible to apply. The awards cover the cost of transportation, tuition, books, and maintenance for one academic year's study abroad. Selection is made on the basis of applicant's personal qualifications, academic record, value of the proposed graduate study or research, and suitability for placement in an institution of higher learning abroad. Most, but not all, of the awards require that applicants speak the language of the country for which they apply.

*Dixie Gammage Memorial Scholarship.* A scholarship to the Music Camp valued at \$60.00. The award is made by auditions at the College.

*General Electric Computer Department Honor Program in Engineering.* The Computer Department of the General Electric Company's Industrial Electronics Division provides funds to assist several outstanding junior or senior computer engineering students at Arizona State. The awards may vary in amount but will include the cost of the recipient's tuition and laboratory equipment. Recipients should agree to work for the G.E. Computer Department during the summer of their junior year and will be paid standard co-op rates. Applicants should be planning to do graduate work in computer engineering.

*General Electric Fellowships.* Thirty-four fellowships for pre-doctoral study at the graduate school of the recipient's choice are offered by the General Electric Educational and Charitable Fund. Arizona State seniors who need financial assistance and who have shown that they could, with advantage, continue their education are eligible to apply. Fellowships are offered in the physical sciences, engineering, industrial management, arts and sciences, law, and business. Stipends vary from a single fellow's minimum grant of \$1750 to a minimum grant for a married fellow with dependent children of \$2500. In addition, the fellowships cover tuition and fees.

*Kemper Goodwin Scholarship.* Kemper Goodwin, Tempe architect, has established this \$800.00 scholarship to be awarded each year to a graduate of Tempe Union High School. Financial need will be the primary consideration in selecting the recipient, although the ability to do at least average college work will be required. The scholarship will be disbursed to the recipient at \$100.00 a semester for four years.

*Kiwanis Scholarships.* Scholarships provided by the Kiwanis Clubs of the greater Phoenix area are available in varying amounts to Arizona residents who are scholastically in the upper half of their classes, are deemed worthy of assistance, and show proof of need of financial assistance to gain a college education.

*Willard LeBond Groene Piano Scholarship.* This scholarship, covering a year's expenses at Arizona State, with the exception of room and board, is offered by Willard LeBond Groene to a student majoring in piano. Selection of the recipient of this renewable scholarship is based on general scholastic ability and musical talent.

*Arthur Emery Harvey Scholarship in Applied Music.* A scholarship in applied piano is given yearly by Hazel Harvey Quaid to the freshman ranking highest in piano sight-reading, repertoire and general musicianship. Examinations are given during Freshman Week.

*Hiram Club Scholarship.* The Hiram Club No. 1 of Phoenix annually makes available a \$50.00 scholarship for a junior or senior student enrolled in the kindergarten-primary curriculum. Qualifications for this scholarship, which is for the second semester of the academic year, are financial need and the potential of becoming an outstanding teacher.

*Irish Hall Scholarship.* The residents of Irish Hall, men's residence hall, present this annual \$140.00 scholarship preferably to an upperclassman who has resided in the hall at least one semester. Selection is based on financial need.

*W. K. Kellogg Foundation Scholarship.* Students in the last or clinical year (within one year of active service) of the medical technology course may be awarded scholarships after they have completed at least 10 weeks of the work of this year. The scholarships are valued at about \$75.00.

*Dr. A. L. Krohn Scholarship.* Dr. A. L. Krohn annually offers a \$250.00 scholarship to an incoming Arizona State freshman whose field of interest is literature. Financial need is a primary consideration in selecting the recipient.

*Los Conquistadores Scholarships.* The Los Conquistadores Club at Arizona State gives each year a scholarship of \$200.00 to a worthy Spanish-speaking high school graduate of Arizona. The scholarship is paid in \$50.00 amounts at the beginning of each semester for four semesters. The award is made on the basis of need, scholarship, character, and promise of future success.

*Maricopa County Society of Osteopathic Physicians and Surgeons Scholarship in Nursing.* A \$136.00 scholarship is presented annually by the Maricopa County Society of Osteopathic Physicians and Surgeons to a graduating Arizona high school senior in the upper one-third of her class who plans to major in nursing. Selection is made on the basis of character, personality, leadership, high ability and promise, and need.

*Mu Rho Alpha Scholarship.* The Mu Rho Alpha Scholarship is awarded to an outstanding music major currently enrolled in the College. Selections are made by a committee of Mu Rho Alpha members. The scholarship provides for the payment of fees for private lessons for two semesters (\$80.00) and is awarded in May at the Honors Day Assembly. Application must be made by February 1.

*Music Camp Scholarships.* These scholarships, providing one academic year's applied music lesson fees (not to exceed \$40.00 a semester) are awarded annually by the College to gifted members of the Music Camp—one each in voice, piano, and instrument. Applicants are selected on the basis of auditions given at the College.

*Phelps Dodge Scholarships.* The Phelps Dodge Corporation annually provides \$4,000.00 in scholarship funds to Arizona State College at Tempe. From this sum two \$500.00 scholarships unrestricted as to field of study are offered each year to graduating seniors of Arizona high schools. The remainder is used to provide scholarships for sophomores, juniors and seniors now enrolled at Arizona State. Awards are made on the basis of high scholarship, high ability and promise, personality, character, and leadership. These scholarships are renewable each year if the recipients continue to meet the above qualifications. Applicants will be tested and interviewed at the College.

*Phoenix Junior Chamber of Commerce Band Scholarship Fund.* The Sun Devil Band performs annually at the Phoenix Junior Chamber of Commerce World Championship Rodeo, and in return the J.C.'s contribute \$2,000.00 to the Band's scholarship fund each year. Cash awards, to defray part of the cost of room and board, are made from this fund to A.S.C. Band scholarship recipients who qualify.

*Phoenix Sales Executive Club Fellowship.* A fellowship of \$300.00 is provided annually by the Phoenix Sales Executive Club of Phoenix, Arizona, to a student in the field of Marketing (Sales). This fellowship is to be awarded on the basis of need, interest in selling, leadership, character, scholarship and fitness to do sales research.

*Phoenix Symphony Orchestra Guild Scholarships.* Two scholarships are provided annually by the Phoenix Symphony Orchestra Guild and Arizona State College at Tempe to full-time students registered under a four-year music curriculum. These scholarships provide for a cash stipend of \$200.00, payable in \$50.00 amounts at the beginning and middle of each semester, and carry the remission of all regular registration and class fees, and the out-of-state tuition fee. Aptitude and proficiency in music as shown by performance on a musical instrument, promise of further growth and development in musicianship, and good character will receive primary consideration in making the awards. Recipients shall audition for membership in the Phoenix Symphony Orchestra.

*Phoenix Symphony Orchestra Guild Graduate Scholarships.* One or more scholarships of \$500.00 are provided annually by the Phoenix Symphony Orchestra Guild to graduate assistants in music at the Arizona State College at Tempe. The scholarship is payable in \$125.00 amounts at the beginning and middle of each semester. Recipients shall audition for membership in the Phoenix Symphony Orchestra.

*Mary H. Redewill Organ Scholarship.* Mary H. Redewill awards annually a scholarship to a student in organ. This scholarship provides for the payment of fees for two half-hour lessons each week for two semesters. Any student who has had previous instruction in organ may audition for the scholarship. In making the award, scholarship, character, breadth of musical background—particularly in organ—performing ability, and interest will be given primary consideration.

*Justine Ward Riseling Memorial Scholarship.* The Salt River Valley Branch of the Association for Childhood Education International offers, in memory of Justine Riseling, who was a teacher in the Phoenix School system, a scholarship of \$50.00 annually to a second semester junior or senior student enrolled under the Kindergarten-Primary or Elementary Curriculum. In making this award, scholarship, character, leadership, and financial need will be given primary consideration.

*National Secretaries Association International, Valley of the Sun Chapter, Scholarship Award.* A \$100.00 scholarship is provided by the National Secretaries Association International, Valley of the Sun Chapter, to a second, third, or fourth-year woman student studying for the secretarial profession at Arizona State. Scholastic attainment, citizenship, and need will be considered in making the selection. The recipient of this award must be a resident of Arizona.

*Rhodes Scholarships.* These are competitive scholarships for which Arizona State junior and senior men are eligible to apply. The scholarships are for study at Oxford University, England, and carry a stipend of 600 pounds a year. They may be held for three years. Qualities considered in making selection are: (1) literary and scholastic ability and attainments, (2) qualities of manhood, truthfulness, courage, devotion to duty, sympathy, kindness, unselfishness and fellowship, (3) exhibition of moral force of character and of instincts to lead and to take an interest in his fellows, (4) physical vigor, as shown by fondness for and success in sports.

*Standard Oil Company of California Scholarship.* This scholarship of \$400.00 is awarded annually on a competitive basis to an Arizona high school graduate. The selection will be based upon high scholarship, demonstrated financial need, character, and promise. Applicants for the Standard Oil Company Scholarship, which is unrestricted as to field of study, will be tested and interviewed at the College. The scholarship is not renewable.

*Sun Angel Foundation Scholarship Fund.* The Sun Angel Foundation, an organization of civic and business leaders dedicated to assist in the growth of Arizona State College, each year contributes scholarship funds to the College. In selecting the recipients of scholarships provided by this fund, priority will be given by the A.S.C. Scholarship Committee to students who: (A) want a college education; (B) have the scholastic aptitude to profit from a college education; (C) preferably have demonstrated ability in one or more recognized extra-class activities; (D) have been active and constructive citizens; (E) lack the financial resources to cover all or any part of tuition, fees, books, room and board. The Foundation has designated that these funds shall be used to provide:

- (A) **Engineering Scholarships.** Five (5) for freshmen. \$200.00 each.
- (B) **Agriculture Scholarship.** One (1) for a freshman. \$300.00.
- (C) **Activity Scholarships.** Provide funds to help defray room and board costs for a limited number of A.S.C. Activity Scholarship recipients, the amount of the award to be determined by financial need.
- (D) **Other Scholarships.** Scholarships covering all or any part of tuition, fees, books, room and board, the amount of the award depending entirely on the extent of financial need. Application for one of these scholarships may be made by any student who feels he meets *all five* of the criteria of selection listed above. These awards are not limited to holders of Arizona State College Scholarships. The number of awards provided, however, is limited by the amount of funds available.

*Tempe Kiwanis Club Scholarship.* A scholarship of \$100.00 is awarded annually by the Tempe Kiwanis Club to a handicapped Arizona student. Preference will be given to a local student and need will be given primary consideration. Other qualifications include: ability, scholarship, and character.

*Root Tilden Law Scholarships.* National competition for these 20 fellowships, valued at \$6,900 each, is open to senior men at Arizona State who wish to study at the New York University School of Law. Candidates will be chosen on the basis of high scholarship, active extra-curricular participation and potential capacity for unselfish public leadership.

*L. N. Treadaway and Associates Accounting Fellowship.* L. N. Treadaway and Associates, Certified Public Accountants, offer a fellowship of \$400.00 annually to a junior or senior student majoring in Business Administration with a field of specialization in accounting. Applicants must be residents of Arizona. In making the award, scholarship, leadership, character, interest in the field



of accounting, and those personality traits which are believed desirable in the field of accounting will be given primary consideration.

*Valley of the Sun Kiwanis Club Agriculture Scholarships.* The Valley of the Sun Kiwanis Club, Phoenix, as one of its service projects, sponsors an Agriculture Scholarship Fund from which scholarships are provided annually to students at Arizona State College at Tempe who are registered under the four-year agriculture curriculum. Contributors to the 1957-58 scholarship fund are: Advance Seed Co., Allied Grain Co., and the Valley of the Sun Kiwanis Club. These scholarships provide for a cash stipend of \$300.00 payable \$150.00 each semester. Recipients must be residents of Arizona and be full-time students registered under the four-year agriculture curriculum. In making the awards, the primary factors to be considered will include: scholarship, ability and promise, personality, character, leadership, and financial need.

*Vesta Club Scholarship.* The Vesta Club gives each year a scholarship of \$800.00 to a worthy Spanish-speaking high school graduate of Arizona. This scholarship will be used to help defray the student's school expenses for four years, and will be given at the rate of \$100.00 each regular school semester. The recipient will be given the choice of attending the Arizona State College at Tempe or Flagstaff, or the University of Arizona. This award is made on the basis of character, need, scholarship, and promise of future success.

*John A. Whidtsoe Memorial Scholarship Foundation.* The John A. Whidtsoe Memorial Scholarships Foundation of the Church of Jesus Christ of Latter-day Saints provides a \$500.00 graduate scholarship, a \$200.00 junior scholarship and a \$200.00 freshman scholarship to active members in good standing of chapters of Delta Phi, returned missionaries honorary fraternity. Scholarship and charter will be the basis for selection.

*Woodrow Wilson Fellowships.* Faculty members at Arizona State are each eligible to nominate candidates for the Woodrow Wilson Fellowships, of which 200 are given annually. The fellowships are designed to attract to the college teaching profession young men and women who possess the highest qualities of intellect, character and personality. The minimum stipend is \$1,250 plus tuition for single fellows. Married fellows will receive special consideration.

*Applications and Additional Information.* Application forms and additional information about any scholarship offered at Arizona State may be obtained from Scholarship-Financial Aids Office, Arizona State College, Tempe, Arizona. Application forms also may be obtained from Arizona high school principals. Completed applications must be received by the A.S.C. Scholarship Committee no later than March 23.

## Loan Funds

Included in the financial aids available to students at Arizona State are small short-term loans for necessary emergency expenses. Funds for this purpose are administered by the College and include the *John W. Allen Loan Fund*, the *Marshall Charitable Foundation Student Aid Fund*, the *Tempe Rotary Loan Fund*, the *Rosenzweig Student Loan Fund*, the *Arizona State Faculty Wives Club Loan Fund*, and the *President's Student Aid Fund*. No interest, but a small service fee, is charged for loans from these funds. The John W. Allen Loan Fund is restricted to worthy athletes and the Rosenzweig Student Loan Fund to worthy prospective teachers. The other loan funds listed above are unrestricted.

Some long-term loan funds, carrying interest charges, are administered by the College and are available to students who meet certain qualifications. The *Alumni Loan Fund* is available to juniors and seniors for necessary college expenses. Loans from this fund are repayable after graduation with interest at 4%. The *Dixon Fagerberg Revolving Fund* provides loans to junior and senior women to be repaid with 4% interest within two years after graduation. The *W. K. Kellogg Foundation Loan Fund* is available for loans to medical technology students in the clinical or pre-clinical years of their course. The interest rate will not exceed 2½%. The *Marshall Foundation Revolving Fund* provides loans to Arizona residents who have attended Arizona State and wish to obtain medical education but are unable to finance such education through any other source. These loans are to be repaid by the student within a period of ten years, with no interest charged during the period of study and internship.

Many organizations outside the College maintain and administer loan funds for which Arizona State students may qualify. Included among these organizations are the *Arizona Federation of Women's Clubs*, the *Charles Trumbell Hayden Chapter of the Daughters of the American Revolution*, the *DeMund Foundation*, the *Independent Order of Odd Fellows*, the *Freeda Marks Loan Fund Committee*, the *Methodist Church*, the *Phoenix Panhellenic Association*, the *P. E. O. Sisterhood*, the *Phoenix Rotary Club* and the *Phoenix Optimist Club*.

*Applications.* Applications and other information about loan funds may be obtained from the Scholarship and Financial Aids Office in the Division of Student Affairs. Students are urged not to drop out of school for financial reasons without first consulting with the Scholarship and Financial Aids Office.

## Honors and Awards

*Academic Vice President's Award.* A decoration is presented by the Academic Vice President of the College to the two cadet commanders, Army and Air Force, winning the annual company - squadron drill competition within their respective departments.

*Air Force Association Medal.* A decoration is awarded by the Air Force Association to the outstanding junior cadet of the advanced Air Force ROTC.

*Alpha Beta Alpha Award.* A book is given to the outstanding senior student of the year in Library Science.

*Alpha Pi Epsilon Secretarial Award.* An award given in the Business Administration Department to the outstanding student of the year in secretarial courses.

*American Association of University Women Awards, Arizona State Division.* A national and a state membership in A.A.U.W. is awarded to two outstanding graduating senior women.

*American Institute of Architects Awards.* Two awards totaling \$25.00 are made to the students achieving the highest standard in first and second year architectural design.

*American Legion Medal.* A medal is awarded by William A. Bloys Post Number 2, American Legion, to the two cadets of the second year Basic Course, Army and Air Force ROTC, displaying the highest academic proficiency and capacity for military leadership in their respective departments.

*Arizona National Guard Award.* A trophy is awarded to the outstanding ROTC cadet who is a member of the Arizona National Guard.

*Arizona Society of Certified Public Accountants' Award.* Made to a senior graduating with the B.S. degree with an area of concentration in accounting. Based on scholarship and contributions to business.

*Arizona State College Streamer.* A decoration is presented by the Military Science and Tactics and Air Science Departments to the guidon of the best drilled Company, Army ROTC. and guidon of the best drilled Squadron, Air Force ROTC.

*Art Purchase Prizes and Awards.* Cash purchase prizes totaling \$400.00 are awarded at the annual Art Exhibition for students and alumni of the Arizona State College Art Department in connection with the campus Art Festival. Prizes are offered in four classifications: oil painting, watercolor, ceramics and sculpture, and graphic and commercial arts. Both regular session and summer session students and alumni are eligible to exhibit. Fifteen faculty citations are awarded to worthy art works in addition to those winning cash prizes. Citation winners receive autographed copies of the illustrated catalog of the Arizona State College Col-

lection of American Art. All awards and citations are officially listed on the records of individuals registered with the Arizona State College Placement Center.

*Associated Men Students' Award.* An award presented by the A.M.S. Council to a senior member of the Associated Men Students in recognition of outstanding service to the College.

*Associated Women Students' Recognition Award.* The A.W.S. Recognition Award is presented each year to a graduating senior woman who is considered the outstanding woman in her class. She is judged on the basis of leadership, personality, scholarship, and service to the College. Recommendations are received from administrators, faculty, and student organizations.

*Association for Childhood Education Award.* A silver trophy to a kindergarten-primary junior or senior girl outstanding in scholarship and service.

*Association of the United States Army Medal.* A medal is presented to the member of the second year advanced course, Army ROTC exhibiting the greatest technical proficiency and highest capacity for leadership.

*Bandsman's Award.* A decoration is presented by the Division of Special Services, Arizona State College, to the outstanding member of the combined Army-Air Force ROTC Band.

*Beta Chi Award.* An award is given to the graduating senior chosen for her good scholarship, her contribution to the Home Economics Club, to the Home Economics Department, and to the College, and her promise of future development.

*Burke Award.* An award of \$25.00 is given by Attorney and Mrs. William Burke to a graduating senior in the Home Economics Department who is outstanding in the field of Nursery School education.

*Chemical Rubber Publishing Company Award in Chemistry and Physics.* The Chemical Rubber Publishing Company annually awards a copy of their Handbook of Chemistry and Physics to the freshman student in general chemistry and to the beginning physics major with the most outstanding performance during the first semester.

*Chicago Tribune ROTC Awards.* A gold and silver medal is awarded by the Chicago Tribune Publishing Company to two Air Force ROTC Cadets of the Advanced Course who have demonstrated military achievement, scholastic attainment and character during the Fall and Spring semesters.

*Chi Omega Social Science Award.* The Chi Omega Social Science Award of twenty-five dollars is given to the outstanding woman student in the field of Social Studies. It is judged on scholarship and general ability in that field. The recipient is chosen by the head of the Social Studies Department and a committee of professors of Social Studies.

*Charles Christopher Memorial Award.* This award, a replica of the trophy given posthumously to Charles Christopher, is given annually by the William H. Patterson BPOE of W. Lodge No. 477, Phoenix to the freshman judged most outstanding in athletic ability, scholarship, and general desirable personal qualities.

*Art Clark Award.* For distinguished art work in connection with student publications (Sahuaro or the State Press).

*Commandants' Award.* A decoration is presented by the Departments of Military Science and Tactics and Air Science to the member of the Army or Air Force Rifle Team compiling the highest average score during competitive firing.

*Consolidated Vultee Aircraft Corporation Award.* A model aircraft is awarded by the Consolidated Vultee Aircraft Corporation to the outstanding junior advanced Air Force ROTC cadet electing to pursue flight training upon graduation.

*Thomas J. Croaff Award.* An award of \$50.00 is given annually by Mrs. Carolyn B. Croaff in memory of her husband, Judge Thomas J. Croaff, to an undergraduate student for a research paper on juvenile delinquency or community problems.

*Dean of the College of Liberal Arts Award.* A decoration is presented by the Dean of the College of Liberal Arts to the two cadet commanders, Army and Air Force, winning the annual platoon-flight drill competition within their respective departments.

*Delta Sigma Pi Scholarship Key.* To encourage high scholarship, Delta Sigma Pi presents annually the Delta Sigma Pi Scholarship Key to the graduating senior who ranks highest in scholarship for the entire course in Business Administration.

*Freshman Art Award.* An award given to a freshman majoring in art. Selection determined on basis of scholarship, as well as art accomplishments and promise as an artist.

*Future Teachers of America Award.* An award given by the Arizona State College Chapter of Future Teachers of America to the graduating senior who shows most promise of leadership in the teaching profession.

*Bob Gehres Award.* An award given each year by Blue Key to the most valuable baseball player in honor of Bob Gehres, an outstanding A.S.C. pitcher, who died in 1950.

*Governor's Medal.* A decoration is presented by the Governor of the State of Arizona to the respective cadet commanders of the Army and Air Force Corps of Cadets.

*Graduating Honors.* The honor, "With Distinction," is given to those whose index of scholarship, for all work taken at the College, is from 3.00 to 3.49 points. "With High Distinction" is given those whose index is from 3.50 to 4.00.

*Hayden Hall Award.* An award to a resident of Hayden Hall for outstanding achievement in service to the hall, scholarship, and service to the College.

*Hillel Honor Awards.* The Hillel Honor Awards are given to students of the Jewish faith, who by their devotion to service, and consecration to duty have made Hillel a worthwhile student organization.

*Home Economics Award.* An award is given to the sophomore Home Economics major having the highest cumulative scholastic record during her first two years of college.

*Interfraternity Council Scholarship Award.* Each semester the Interfraternity Council awards a scholarship trophy to the fraternity with the highest scholarship. In addition, a "traveling trophy" moves to the highest fraternity, and at the end of ten semesters becomes the property of that fraternity earning it the greatest number of times.

*The Fred M. Jahn Award.* An award of fifteen dollars presented annually to a student doing outstanding work in journalism.

*Kappa Delta Pi Award.* An award of twenty-five dollars by Kappa Delta Pi is made to the student having the highest cumulative index for all courses taken in the freshman and sophomore years at Tempe. The minimum number of hours is sixty.

*Kappa Delta Pi Pin.* This award goes to a graduating senior who attains the highest cumulative index for the junior and senior years under the conditions prescribed for Kappa Delta Pi award.

*Kappa Kappa Psi Award.* Beta Omicron Chapter of Kappa Kappa Psi presents an award to the most outstanding senior of the College Band.

*La Liga Panamericana Award.* An award given to a sophomore for outstanding work in Spanish.

*Letter "A" Awards.* A "Letter A" is awarded by the Athletic Department, Arizona State College, to the lettermen of the Army ROTC and Air Force ROTC Rifle Team.

*McGrew Printery Journalism Award.* An award of ten dollars to a student doing outstanding work in journalism.

*Mask and Sandal Award.* A book is awarded each year by Mask and Sandal for all-around service to the Drama Workshop.

*Moeur Award.* This award of \$50.00 is given by Sidney B. and Annie Laurie Lassator Moeur, both graduates of the class of 1914, to the graduate of any four-year curriculum who attains the highest standing in academic work during the four years immediately preceding graduation.

*Ralph H. Morris Instrumental Music Award.* An award of \$100.00 is given by Mary Scott Morris, in memory of her father Ralph H.

Morris, to a junior student of exceptional talent in instrumental music.

*Mu Rho Alpha Award.* An award given by the honorary fraternity, Mu Rho Alpha, to a senior music major outstanding in musicianship and artistic performance.

*Music Department Award.* An award is presented by the Music Department, Arizona State College, to the outstanding second year basic member of the combined Army-Air Force ROTC Band.

*Panhellenic Scholarship Cup.* A Panhellenic Scholarship Cup is awarded each year by the Phoenix Panhellenic Association to that sorority which has the highest scholastic average. Any sorority receiving the award for three consecutive years retains the cup permanently.

*P.E.O. Award.* Chapter X, Tempe, of P.E.O. awards \$25.00 to a woman student of high ideals and outstanding service. Selection is based on integrity, intelligence, and aptitude.

*Pershing Rifle Meritorious Award.* An award presented by the Cadet Honorary Colonel to the Pershing Rifleman who has consistently contributed most to the furtherance of Pershing Rifle Co. D, 10th Reg. during the academic year.

*Phi Eta Sigma Award.* This award is given to the male student who attains the highest cumulative index for all courses taken in the freshman and sophomore years at Tempe .

*Pi Kappa Delta Awards.* Awards are made annually by this national honorary forensic fraternity to students who achieve forensic proficiency.

*Pi Omega Pi Award.* Alpha Iota Chapter of Pi Omega Pi presents an award to the graduating senior selected as the most outstanding prospective commercial teacher.

*Pleiades Freshman Award* is presented at the close of each year to the most outstanding woman in the freshman class.

*The Pleiades Plaque.* Awarded by Pleiades to the women's hall having the highest collective undergraduate scholarship index. The group winning it three times in succession retains the plaque.

*President's Award.* A decoration is presented by the President of the College to the two outstanding cadets of the second year advanced course of their respective Cadet Corps.

*Psi Chi Award.* An award is annually presented to a member of Psi Chi with outstanding scholastic achievement and service.

*Charles William Rawlins Memorial Award.* Tau Kappa Epsilon Fraternity presents a trophy to the outstanding intramural man within fraternities. This is in tribute to the late Bill Rawlins, a fine fraternity man and a fine athlete.

*Religious Activities Awards.* Two awards of \$5.00 each are presented each year by the Student Religious Council to the man student and the woman student giving outstanding service in religious activities for the year. These awards are determined on the basis of (1) service to local college group and general church program, (2) service to total campus religious program, (3) personal religious living, and (4) other evidences of leadership.

*Republic Aviation Award.* A model F-84 Thunderjet is awarded by the Republic Aviation Corporation to the First Year Advanced Air Force ROTC Cadet who makes the most effective public presentation on an Air Power Theme.

*Reserve Officers' Association Scholarship and Medal.* A scholarship of twenty-five dollars and a medal are presented by the Phoenix Chapter, Reserve Officers' Association of Arizona to the outstanding member of the first-year Advanced course, Army R.O.T.C.

*Reserve Officers' Training Corps Medal.* A decoration is presented by the Dean of Students to the two cadets making the greatest personal contribution to the activities of their respective Cadet Corps.

*Will H. Robinson Award.* An award of twenty-five dollars, in honor of Will H. Robinson, is given annually to a freshman. The award is based on high scholarship for the first semester considering the number of hours the student gives to self-support.

*Rosenzweig Trophy.* This trophy is given annually by I. Rosenzweig & Sons to an outstanding letterman having the highest total point rating on athletic ability, general aptitude index, and scholarship index.

*Sons of American Revolution Award.* An award to the two cadets of the second year basis course, Army and Air Force ROTC, having the highest academic and military class standing and having rendered outstanding service to their respective departments and the College. Recommended by the PMST and PAS, chosen by the Arizona Society.

*Superior Cadet Ribbon Award.* A Department of the Army award to one Army ROTC student, in each academic class, chosen by a board of officers, from the students in the upper fourth of his class in ROTC and academic standing. The award consists of a ribbon, certificate and lapel device.

*Tau Beta Sigma Award.* Sigma Chapter of Tau Beta Sigma presents an award to the most outstanding freshman of the College Band.

*Tempe Daily News Journalism Award.* An award of ten dollars is presented to a student doing outstanding work in journalism.

*Theta Chi Epsilon Award.* This award is given annually to a senior student for excellence in scholarship and art achievement.



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*Veterans of Foreign Wars Medal.* A medal is presented by Bob Finch Post Number 3632 (Veterans of Foreign Wars) to the two cadets of the first year basic course, Army and Air Force ROTC, exhibiting the highest academic proficiency and potentiality for military leadership in their respective departments.

*Weaver and Drover Prize for Architectural Design.* An annual prize of \$50.00 is awarded to the second year student submitting the winning design in the prize competition.

*West Hall Award.* An award to a resident of West Hall for outstanding achievement in scholarship, and service to the hall and to the College for four years.

*Women's Physical Education Award.* An award given by the women's division of the Physical Education Department to a senior major for achievement in physical education.

# College Regulations

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## Conduct of Students

*Standards.* It is the policy of the College to give students the largest degree of liberty consistent with good work and orderly conduct. Students of a state supported college have an important responsibility to the citizens who help pay for their education, and to each other; and their conduct, both on and off the campus, should reflect this responsibility. Specifically, each student is expected:

1. To conduct himself in such a manner as to uphold, not detract from, the good name of the College and fellow students by conforming to the law and accepting the moral and social practices of the community, state, and nation.
2. To abide by college rules and regulations.
3. To respect property, public and private, and to meet his financial obligations in relations with fellow students, others and the College.
4. To show active concern for the physical safety of self and others.
5. To demonstrate consideration and respect for the rights and personal privileges of other human beings regardless of such factors as race, nationality, religion or color.

Any proposed enterprises by students or organizations bearing the name of the College, or representing or purporting to represent the College, must receive the official sanction of the College before announcements are made of such enterprises.

The possession, serving or use of intoxicants of any kind whatsoever is prohibited on the campus, at all social functions held under the auspices of college-sponsored organizations or groups, wherever held, or at any other event in which college students participate where such possession, serving or use may reflect on the good name and reputation of the College.

These standards apply to all students as long as they are enrolled in the College, both on and off campus, and the College assumes that the act of registering as a student implies full acceptance of these standards of conduct. Failure to conform to these standards may be considered sufficient cause for dismissal from the College. The authority of the College is exercised over all students individually and over all student groups or organizations bearing the name of the College, or representing or purporting to represent the College, in any student enterprises to the extent necessary to safeguard the good name and well-being of the College.

Among the circumstances which indicate possible dismissal from the College, if the student is found guilty, are whenever a student:

1. Deliberately endangers or seriously threatens the life or physical safety of others or self.
2. Leads or participates actively in destructive mob action.
3. Has serious or repeated difficulties with law enforcement authorities.
4. Commits sexual immorality.
5. Refuses to cooperate in efforts made to help him or her adjust to college responsibilities, or persists in conduct which, though perhaps less flagrant violations than items 1 through 4, eventually would serve to discredit the College and/or fellow students.

Appropriate dress is expected of students on the campus and in all campus buildings. In accordance with Associated Women Students' regulations, women students are expected to wear street clothes such as sweaters and skirts, dresses, or suits, unless they are going to or from a sports activity. For further details on dress in the Memorial Union and women's residence halls see "Co-ed Cues."

## Attendance

The college has no uniform system of cuts. The loss incurred by a student for absences depends upon the nature and the amount of work missed, of which the instructor is the sole judge. The instructor will recommend that a student be dropped from class whenever, in his opinion, the student's continuation in the course seems unprofitable to the student or detrimental to the class, and will send a memorandum to the Registrar and Director of Admissions who will initiate the "Authorization for Dropping Course" form. All *veteran students* are to be reported to the Office of the Registrar and Director of Admissions when absent for three or more consecutive class periods or when the instructor considers the total number of absences excessive, whether consecutive or not.

No excuses for absence from class are granted either by the administration or by instructors. This applies to any absence occasioned by a student leaving early for, or returning late from, a scheduled vacation period as announced in the College calendar. The student alone assumes full responsibility for all absences. Instructors will permit students to make up tests and other work missed when the absence was due to causes beyond the control of the student or on account of activities assigned by the College. The instructor is the judge of the validity of reasons given by the students for absence. Students absent from classes because of a confining illness in the infirmary, may request a statement from the Director of the Student Health Service which will give the

dates the student was confined as a patient. Students absent from classes because of a confining illness at home, may request a similar statement from the Dean of Students or Associate Dean of Students.

## Fees, Deposits, and Expenses

*Changes in Fees.* The Board of Regents reserves the right to change fees and charges from time to time without notice when necessary.

*Extending Credit.* The College cannot extend credit, therefore, students must have on hand when registering sufficient funds to pay for registration, incidental fees, books, and board and room for one month.

*Definitions.* *Regular fees* are those paid by all students. *Special fees* are those paid by certain students only, and under the conditions indicated. *Deposits* are made to cover certain contingencies.

All or part of the deposit may be returned depending upon the charges incurred by the student.

### Regular Fees

Following are the regular fees paid each semester by all students with the sole exception of Extension and Correspondence.

Those registering to audit pay the same as regular students:

Registration Fee.....\$37.50

Paid by all students registering for more than six (6) semester hours. Those registering for six (6) semester hours or less pay at the rate of \$7.50 per hour.

Gymnasium Fee .....\$2.00

Paid by all Freshman and Sophomore students registering for more than six (6) semester hours.

The following fees are also paid by all students who register for more than six (6) semester hours:

Student Activity .....\$12.50

College Series Fee ..... 1.00

Health Fee ..... 4.00

Student Union Fee ..... 5.00

Library Fee ..... 2.00

### Special Fees

Special fees are paid by certain students under the conditions given below:

Non-resident Tuition Fee (per semester).....\$200.00

All students classified as non-residents, who register for twelve (12) or more semester hours pay the full non-resident tuition fee, except graduate students who have been awarded graduate fellowships or teaching assistantships.

Students classified as non-residents who register for less than twelve (12) semester hours, but more than six (6) semester hours, are required to pay a non-resident tuition fee of \$16.50 per semester hour. Those students registering for six (6) or less semester hours pay no tuition.

A student to be considered a legal resident of Arizona for the purpose of registering at the Arizona State College at Tempe must present evidence as follows:

(1) If under 21 years of age—that the supporting parent (or guardian having legal custody) has been a legal resident of the state of Arizona for at least 1 year next preceding registration.

In the event that a legal resident of Arizona is appointed as the guardian of a non-resident minor, such minor does not become a resident until the expiration of 1 year from the time of appointment and then only upon a proper showing that such appointment was not made to avoid the non-resident fee.

(2) If over 21 years of age—that legal residence in the state has been established for at least 1 year next preceding registration, and that he is eligible to become a registered voter. (Sec. 3 of Art. 7, Constitution of Arizona, provides, "For the purpose of voting, no person shall be deemed to have gained or lost a residence . . . while a student at any institution of learning . . ." Sec. 6, Art. 7 provides, "No soldier, sailor or marine . . . shall be deemed a resident of this State in consequence of his being stationed at any military or naval place within this state.")

(3) If an alien who has taken out first naturalization papers—that residence has been maintained in the state for at least 1 year previous to registration, and that he has filed with the United States Immigration and Naturalization Service an application for such citizenship or a declaration of intention to make such application when eligible.

The student must have the question of his legal residence passed upon previous to registration and payment of fees. The responsibility of registration under proper residence is placed upon the student. If there is any possible question as to the legal residence, the student is responsible for obtaining a blank from the Registrar's Office; filling it out completely; taking it to a notary public in the Business Office, and making a sworn statement concerning the facts given, and returning the blank to the Registrar's Office. Any student found to have made a false or misleading statement as to his residence shall be subject to dismissal from the College.

In all cases where the records indicate that the student's home is outside of Arizona, the non-resident fee shall be assessed. Claims for refund may, however, be filed at any time within 30 days.

Non-resident graduate students also pay the tuition fee.

Private Lessons — Music Majors.....\$40.00

In addition to the usual college registration fees, music majors will pay a flat rate of \$40.00, per semester, which covers all private instruction required in the major teaching fields and in fields of specialization. All non-majors will pay the fees for private instruction listed below.

For two half-hour lessons per week in piano, voice, violin, violoncello, band and orchestral instruments, the fee is \$40.00 per semester. For one half-hour lesson per week the fee is \$27.00 per semester.

Class Lessons—Music .....\$9.00 or \$12.50

The fee for two (2) one-hour piano lessons a week is \$12.50 per semester. For two (2) class lessons of one (1) hour each in all other music classes, the fee is \$9.00 per semester.

Rentals—Musical Instruments

The rental for school-owned solo instruments is \$2.50 a semester. Students using college-owned instruments are held financially responsible for damage done them from the time received until returned and inspected at the close of the semester.

Rental on the Hammond organ is \$5.00 per semester, for one hour daily practice. Rental on practice pianos is \$5.00 per semester, for one hour daily practice; \$7.50 per semester, for two hours daily practice.

Registration and Other Fees

Students carrying more than six (6) semester hours of work pay the full registration fee and all other regular fees. Those carrying six (6) hours or less pay \$7.50 per semester hour plus laboratory fees.

Refunds

In case an applied music course is dropped because of actual illness or other emergency beyond the control of the student, not more than half of the semester fee paid may be refunded.

Apartment Reservation Deposit .....\$10.00

The student's or prospective student's name will be placed upon the waiting list for student apartments upon receipt of a \$10.00 deposit and proper application.

<sup>1</sup>The attention of students who have not attained the age of 22 years and whose parents do not live in the state of Arizona is directed to the fact that presence in the state of Arizona for a period of more than 1 year immediately preceding the opening day of the semester during which it is proposed to attend the Arizona State College at Tempe does not, of itself, entitle the student to classification as a resident.

### Transcript Fee

There is no charge for the first transcript. For each additional transcript there is a fee of \$1.00. Requests for transcripts should be in the hands of the Registrar and Director of Admissions one week in advance of the time needed.

### Senior Check-Out

Each senior is entitled to one official check-out, at the time application for graduation is filed, without charge, under the curriculum designated in his application for graduation. A fee of \$1.00 will be charged for any additional check-outs.

Absentia Fee .....\$7.50  
Students who are granted permission to receive their degree in absentia pay this fee.

### Auditor's Fees

Those taking courses for record purposes register and pay the regular fees.

Laboratory Fees.....See course descriptions  
With few exceptions such fees are not returnable.

Master's Degree Qualifying Examination Fee.....\$3.50

Master's Thesis Binding Fee.....\$5.00

Education Specialist Report Binding Fee.....\$10.00

Doctoral Dissertation Binding Fee.....\$10.00

Doctoral Dissertation Fee.....\$50.00

This fee is paid by doctoral candidates who have been admitted to candidacy for the Doctor of Education degree.

Doctoral Dissertation Micro-Film Fee.....\$10.00

Doctoral Qualifying Examination Fee.....\$7.50

Education Specialist Qualifying Examination Fee.....\$7.50

Education Specialist Report Fee.....\$25.00

Special Examination Fee .....\$1.00

When, because of absence, or for any reason, it becomes necessary for a student to request a special examination in any course, a fee of \$1.00 may be required for this special privilege.

Comprehensive Examination Fee.....\$5.00 per semester hour  
Paid by all students seeking to establish credit by examination.

Test Fees—Vocational.....\$0.50  
A nominal fee is charged to pay the cost of test materials only.

Application for Graduation Fee.....\$10.00  
See description under another section of the bulletin headed Graduation Requirements and Degrees.

Cap and Gown Rental Fee.....\$2.75 to \$7.50  
Bachelor's cap and gown for baccalaureate and commencement exercises, \$2.75. Master's cap, gown, and hood, \$6.90. Education Specialist cap, gown, and hood, \$7.50. Doctor's cap, gown, and hood, \$7.50. These are approximate amounts and subject to change.

Fee for Dropping Course .....\$0.50  
Charged following last day of registration.

### Late Fees

Late Registration .....\$5.00  
All students registering on the date specified for the beginning of classes, or thereafter, pay this fee.

Late Aptitude Tests.....\$2.00  
Paid by students taking the aptitude tests on the date specified for the beginning of classes or thereafter.

Late Physical Examination.....\$1.00 to \$3.00  
Charged beginning at noon of the last day scheduled for registration.

Late X-ray.....Actual Cost  
 Charged all students who fail to take the X-ray on the date specified by the College.

Late Graduation.....\$5.00  
 If paid after specified dates.

Deposits

Deposits are required of those students wishing certain privileges or services. The deposits are returnable less any charges which may have been incurred during the term of the service being rendered.

Science Breakage Deposits

In the following courses students are required to purchase a \$4.00 deposit card. When their breakage exceeds this amount, they will be required to purchase additional deposit cards.

CH 111, 113, 114, 115, 221, 225, 226, 231, 300, 331, 332, 341, 421g, 431g, 441g, 442g, 452g, 465g.

Women's Gymnasium Deposit (per semester).....\$5.00

This deposit will be refunded if the gymnasium suit, towels, leotard, and lock are returned in good condition.

Military Uniform Deposit (returnable) .....\$25.00

General Expenses

Board and Room

The Memorial Union Dining Hall offer meals on a 5-day or 7-day meal ticket basis with as many additional portions as the student desires served at no extra cost. Individual meals are also available on a la carte basis at regular prices. The meal ticket costs per semester are \$165.00 for 5-day or \$225.00 for 7-day meal tickets. This breaks down to a daily cost of \$2.00 for three meals.

Rooms are available in college residence halls at rates ranging from \$88.00 to \$116.00 per semester. Sheets, pillowcases, and weekly laundry service are provided. Reservations for rooms are obtained by filing an application and a deposit of \$10.00 with the Housing Office. Deposits are refunded upon withdrawal from college, less any damages or other charges assessed. No refund of any part of a current month's room rent will be made unless a move is requested by the College.

Textbooks .....\$30.00 up

The outlay for books and stationery will vary from \$30.00 to \$40.00 per semester. All books, equipment, and supplies may be obtained at the College Bookstore.

*General Summary.* The following summary includes the fees and minimum expenses incurred by a student, exclusive of board and room, for one college year:

Registration Fee .....	\$ 75.00
Activities, Health, etc. ....	49.00
Tuition (free to Arizona Students) .....	0.00
Books and Stationery (approximately) .....	60.00
Laboratory Fees (approximately) .....	20.00
Total.....	\$204.00

Payment and Refund of Fees

Payment of Fees

The payment of fees cannot be deferred. By regulation of the Board of Regents based on a ruling of the Attorney General, registration and other college fees are payable on the day of registration.

Method of Payment

Checks, drafts, and post office or express money orders should be made payable to the Arizona State College.

## Refunds

### Activities and Other Fees Including Laboratory

Students withdrawing not later than Saturday of the first week receive a refund of eighty per cent of all fees paid; sixty per cent at the close of the second week; forty per cent at the close of the third week; twenty per cent at the close of the fourth week; thereafter, no refund is made.

### Forfeiture of Refunds

All refunds and deposits due students for any reason whatsoever will be forfeited unless called for on or before June 30 of the College year in which they are due. Should June 30 fall on Sunday or on a day when the Business Office is closed, the refund will be made on the next business day.

## Marking System

*Undergraduate Scholarship Ratings.* Scholarship grades on the student's report card and on his permanent record card are indicated by the letters and explanations given below:

A, Highest.	Cr, Credit, without definition.
B, Above average.	E, Failure.
C, Average.	W, Withdrew.
D, Lowest passing.	Audit, Audit

Inc., Incomplete, given and removed as specified below.

*Incomplete.* A mark of Inc. is given only when a student is unable to complete a course because of illness or other conditions beyond the control of the student. Negligence or indifference are never accepted as reasons for giving an Inc. Incompletes must be removed in a manner prescribed by the instructor, not later than the middle of the following semester unless an extension of time is granted. If the Inc. is not removed, the instructor will report a mark of W. The Department Head will report the mark of W if the instructor in his department who reported the incomplete is no longer in the employ of the college. Incompletes received in summer session courses must be removed in a manner prescribed by the instructor not later than December 31 next following unless an extension of time is granted by the instructor.

*Marks of E.* Students receiving marks of E must repeat the course in the regular class if they desire credit. Both the E and the new mark remain as a part of the student's permanent record.

*Mark of W.* The mark of W is given whenever a student officially withdraws from a course; the instructor will enter the date of the official withdrawal next to the mark of W on the end of semester grade report.

*Repetition of Course.* Students may repeat a course in which a low grade has been received. In such cases students must secure an Approval Form from the Registrar and Director of Admissions and have it signed by the instructor and curriculum adviser. These forms must be submitted with other registration materials when completing registration.



When a course is repeated, the original grade remains on the student's record and is included in his cumulative scholarship index. Semester hours of credit are counted only once for the course but the honor points are included on the scholarship index both times the course is taken.

*Dropping Course at Instructor's Request.* A faculty member will drop a student from his class with a mark of W whenever, because of absence or other reason, he thinks the work of the student is such as to justify it. (See Attendance, p. 73).

*Change of Grade.* A grade once reported to the Registrar's Office may be changed only upon the authorization of the faculty member issuing the original grade and the approval of the Dean of the College concerned.

A change of grade is made by filing an Authorization of Change of Grade Form with the Registrar's Office. The reason for the change of grade shall be entered on the form and signed by the faculty member and by the Dean of the appropriate college.

*Grade Points.* For the purpose of computing the scholarship index, grade points are assigned to each of the grades as follows: A, 4 points for each semester hour; B, 3 points; C, 2 points; D, 1 point; and E, 0 points.

*Scholarship Index.* The scholarship index is obtained by dividing the total number of grade points earned by the number of semester hours in the student's course load. Courses in which marks of W, Inc., Cr., and Audit are given are not included in determining the number of semester hours in the course load.

*Disqualification.* All students who at the close of any semester or term, fail to receive passing marks in fifty per cent of the semester hours for which they are officially registered at the close of registration or who fail to receive a semester scholarship index of 1.00 are disqualified. Students disqualified at the close of the first semester are not eligible for the second semester. Students disqualified at the close of the second semester are not eligible to attend summer session or the first semester of the following college year.

*Reinstatement.* A student who has been disqualified may file an application for reinstatement for the next succeeding semester with the Dean of the College in which he was registered. A student who is disqualified at the close of the second semester is not permitted to file an application for reinstatement for either of the succeeding summer terms. After a review of his case by the Dean of the College and upon recommendation by the Standards Committee of the college in which the student was registered, he may be reinstated. A disqualified student has the right to be heard by the respective Standards Committee.

*Scholarship Probation.* Students who have been reinstated by action of the Admission and Standards Committee are on scholarship probation during the semester following reinstatement.

*Reports to Students.* Each student receives a Deficient Scholarship Report at the mid-semester for courses in which his marks are D or E. At the close of each semester, he receives a report showing his standing in each course taken. These Semester Grade Reports are handed to the student by his adviser during a conference held with the student. Only the final semester grades are entered on the student's permanent record card.

*Reports to Parents.* A duplicate of the report cards of all unmarried students under twenty-one showing their standing in each class is mailed to the parent at the close of each semester. Report cards of other students are mailed to their home address unless the Office of the Registrar and Director of Admissions is notified prior to final examination week.

*Reports to High Schools.* A copy of the semester grade report of each student is sent to the high school from which he graduated. This is for the purpose of aiding high schools to evaluate their programs and to maintain institutional studies of their former students.

## Air Science

*General.* The Arizona State College at Tempe offers courses in basic and advanced Air Force military training. The Basic Course is designed to develop an understanding of the Air Force its organization, problems, and techniques. The purpose of the Advanced Course is to train selected prospective graduates in a balanced course of officer training, both theoretical and practical, which will qualify them to perform the duties of a commissioned officer of the United States Air Force. Students who successfully complete the Advanced Course receive a commission as Second Lieutenant in the Air Force Reserve.

*Requirements for Admission.* All physically fit male students, who are citizens of the United States, entering the College as freshmen or sophomores and carrying more than 5 semester hours of work, are required to complete two years of basic ROTC training. However, a student will not be enrolled initially or be allowed to re-enroll in the AFROTC after a period of nonparticipation in AFROTC training, if his age is such that he will be unable to complete all requirements for appointment as a Reserve of the Air Force prior to reaching his 28th birthday. The two years of basic ROTC training are a prerequisite for graduation unless the student is properly exempt. The Advanced Course is available as an elective to men who have completed the Basic Course. On the basis of previous honorable active service in the Air Force, Army, Navy, Marine Corps, or Coast Guard, a student may request from the head of the department a waiver of the Basic Course, or any portion thereof, as a requirement for entrance into the Advanced Course. Veterans entering at freshman or sophomore level who desire a commission through AFROTC will be required to take, in phase with non-veteran contemporaries, the portion of the

basic program which remains. The Advanced Course, when elected by the student, becomes a prerequisite for graduation unless, for good reason, the requirement is waived by competent authority. Students electing the Advanced Course must be physically fit for military duty and within the age limit set forth above.

*Exemptions.* Exemptions from AFROTC training will be granted to only the following: (a) aliens; (b) those certified as physically unfit by the college physician; (c) those presenting evidence of at least one year of military service; (d) those transferring sufficient credit for military training from an accredited institution; (e) those disqualified by age; (A student will be disqualified if his age is such that he will be unable to complete the Advanced Course and the requirements for a degree prior to reaching his 28th birthday.) (f) those students who transfer with junior or senior standing from institutions not offering or requiring ROTC Training; (g) those offering other reasons acceptable to the Admissions and Standards Committee. Students requesting exemption will present the evidence to the Registrar on which they claim exemption at the time of registration.

*Attendance and Credits.* Basic students spend 2 hours in class and 2 hours in drill each week, and receive 1.5 semester hours of credit. Advanced students spend 4 hours in class and 2 hours in drill each week, and receive 3 semester hours of credit. Regular attendance in class and drill is required. Advanced students are required to attend one summer training unit for approximately 4 weeks, normally at the end of the first year of the Advanced Course. The military training requirement does not excuse students from any of the physical education requirements.

*Pay and Deferments.* Advanced students receive pay for subsistence at the rate of \$.90 per day while attending the two year course. The total pay for subsistence will not exceed 637 days less those days while in attendance at a Summer Training Unit. In addition to the subsistence allowance, the student will receive pay at the rate of \$78.00 per month during attendance at the summer encampment. Travel pay, uniforms, housing and dining facilities are provided at camp without cost to the student. Draft deferments for Freshmen, Sophomores, Juniors and Seniors are available to those qualified students who desire to take or who are taking the Advanced Course.

*Uniforms and Texts.* Each student registering for ROTC will make a deposit of \$25.00 in the Business Office. He will present the receipt to the Military Property Custodian as the basis for issue of prescribed uniforms, text books, and other materials. The full deposit, less any deductions to defray cost of any items lost or damaged through neglect, is refunded at the end of each semester.

## Military Science and Tactics

*General.* Arizona State College offers Basic and Advanced Courses in General Military Science in the senior division of the Army Reserve Officers' Training Corps. The purpose of these courses is to train college students for positions of leadership in the Army in time of national emergency, and to strengthen their educational foundation for intelligent citizenship. Instruction is given, in both Basic and Advanced Courses, in subjects common to all branches of the Army. Advanced Course enrollees may volunteer for Army Flight Training which will provide qualified ground and flight instruction leading to a CAA license. The successful completion of the two-year Advanced Course program satisfies military education requirements for commission as a second lieutenant in any one of the various branches of the Army Reserve. Students designated as Distinguished Military Graduates are eligible for selection for a Commission in the Regular Army.

*Requirements for Admission.* All physically fit male students, who are citizens of the United States, and under 23 years of age, entering the College as freshmen or sophomores and carrying more than five semester hours of work, are required to complete successfully the two years of basic ROTC training. This requirement is a prerequisite for graduation unless the student is properly exempted. Students without previous active service in the armed forces will not be admitted initially to the Basic Course after reaching their twenty-third birthday. Veterans who have completed one year or more of continuous active service must not have reached age 25 at time of initial enrollment in the Basic Course. No student will be accepted for initial enrollment in the Advanced Course if he has reached age 27.

Students having completed three years of junior ROTC training and veterans having completed not less than six months, nor more than twelve months, of active service, may be exempt from the first year of the Basic Course, provided such previous training or service was completed within five years of date of initial enrollment in the ROTC at this College, and provided they receive the approval of the Professor of Military Science and Tactics. Students receiving credit under the above provisions will be enrolled in their initial Military Science courses when they attain equivalent academic classification.

Students having completed the Army ROTC Basic Course and veterans having completed one year or more of continuous active service in the armed forces may, with the consent of the head of the department, enroll in the Advanced Course, provided such previous training or service was completed within five years of date of application for enrollment in the Advanced Course.

*Exemptions.* Exemptions from the ROTC requirement will be granted only to: (a) aliens; (b) those certified as physically unfit by the college physician; (c) those disqualified by age; (d) those presenting evidence of at least one year of continuous active ser-

vice in the armed forces; (e) those transferring sufficient credit for ROTC training from an accredited institution; (f) those entering the college with junior or senior standing; (g) those offering other reasons acceptable to the Admissions and Standards Committee.

Students requesting exemptions must present the evidence upon which request is based to the Registrar at the time of registration.

*Attendance and Credits.* Basic Course students spend 2 hours in class and 2 hours at drill each week and receive 1.5 semester hours of credit. Advanced Course students spend 4 hours in class and 2 hours at drill each week and receive 3 semester hours of credit. Regular attendance in class and drill is required. Absences for reasons which were under the control of the student are reflected in semester grades.

Advanced Course students are required to attend one summer camp for approximately six weeks, normally at the end of the first year of the Advanced Course.

The ROTC requirement does not satisfy any of the physical education requirements.

*Pay and Deferments.* Advanced Course students receive a subsistence allowance of approximately \$27.00 per month except for the period of summer camp; travel pay to and from summer camp; and pay of approximately \$78.00 per month and subsistence while at camp. For each unauthorized absence of an Advanced Course student from an hour of ROTC instruction, an amount equivalent to 2 days commutation of subsistence will be deducted from his next payment of commutation.

Deferment from induction is granted on a competitive basis to those Basic Course students who apply for and are conditionally selected for Advanced Course training. Advanced Course students, regularly enrolled and meeting the criteria of their Local Selective Service Board, receive deferments from induction and, therefore, must be transferred out of Ready Reserve and National Guard Units upon entry into the Advanced Course.

*Uniform and Texts.* Each student registering for ROTC training is required to make a deposit of \$25.00 in the Business Office. He will present the receipt to the Military Property Custodian as the basis for issue of prescribed uniforms, text books and other materials. The full deposit, less deductions to defray cost of any items lost or damaged through neglect, is refunded at the end of each semester.

## General Education

*Requirements.* Completion of a pattern of general education courses is required of all students who are candidates for a bachelor's degree in any curriculum. The general program of courses is given below. Since requirements under this program vary somewhat from one curriculum to another, the student should select from indicated courses only after consultation with his adviser. Students from approved institutions of higher education ordinarily will be given credit, hour for hour, for work done in those institutions in so far as it is equivalent in content to courses in this program.

*Objectives.* The purposes of general education at Arizona State College at Tempe are expressed in the following objectives, adopted by the faculty in 1954.

1. To develop the individual's awareness of, and esteem for, the privileges and responsibilities of citizenship in a democratic society, and to motivate effective participation in endeavors for the common good.
2. To so improve the individual's ability to think, that he will reach valid conclusions and build a system of critically examined values by which to guide his life.
3. To so improve the individual's ability in the basic arts of communication, that he will express himself effectively, and read and listen with understanding and discernment.
4. To introduce the individual to the major problems of philosophy, and to develop a discriminating appreciation of art, music, and literature, and encourage a satisfying avocational interest in these fields.
5. To develop sufficient understanding of the biological and physical sciences, and of mathematics, so that the individual will comprehend the roles they play in our civilization and appreciate the scientific approach to many problems of human experience.
6. To develop the individual's understanding of human society, and of his cultural heritage, and to motivate application of this understanding to the social issues of the time.
7. To help the individual achieve sufficient understanding of himself, to maintain physical and mental health, and to develop his abilities for his own and the common good.

*Program.* Courses which are accepted as meeting general education requirements, and the requirements for each of the five areas, are indicated in the program below. A student is exempt from general education courses in his major field. Engineering students are exempt from general education courses in the sciences and in mathematics. Students of nursing are exempt from general education courses in the sciences and from HE 100, Hygiene. Majors in biological science are exempt from HE 100, Hygiene. Men in R.O.T.C., and students taking two or more

semesters of marching band, are required to have but one semester hour of physical education activity.

**I. Communications.**

For all curriculums leading to a bachelor's degree, 8 semester hours.

EN 101, 102 First Year English	(6)
SE 200 Elements of Speech, or SE 120 Speech Fundamentals	(2)

**II. Humanities.**

For curriculums leading to the B.A. degree in College of Liberal Arts, 14 semester hours of which 8 hours must be in one foreign language; for all other curriculums leading to a bachelor's degree, 8 semester hours.

**Option I**

Eight semester hours selected from the following, not more than one course in a subject: AC 100 Introduction to Architecture; AH 102 Introduction to Art, AH 211 Western Art to the Renaissance, AH 212 Renaissance Art; EN 201 World Literature—The Classical and Medieval Periods, EN 202 World Literature—The Renaissance and Modern Periods, EN 103 Introduction to Literature, EN 341, 342 American Literature; FL 100 Introduction to Foreign Languages; MU 107 Introduction to Music, MU 105 Music in Living; PI 101 Introduction to Philosophy, PI 228 Contemporary Philosophy. (8)

**Option II**

HU 201, 202 Introduction to the Humanities, or HU 301, 302 The Humanities in Modern America, and one course from the following: AH 211 Western Art to the Renaissance, AH 212 Renaissance Art; EN 201 World Literature—The Classical and Medieval Periods, EN 202 World Literature—The Renaissance and Modern Periods, EN 341, 342 American Literature; FL 100 Introduction to Foreign Languages; MU 105 Music in Living; PI 228 Contemporary Philosophy. (8)

**Option III**

One foreign language (8)  
Six semester hours selected from the courses in Option I, not more than one course in a subject.  
FL 100, Introduction to Foreign Languages, may not be used in this option. (6)

**Option IV**

One foreign language (8)  
HU 201, 202 Introduction to the Humanities (8)

**III. Social Sciences**

For all curriculums leading to a bachelor's degree, 9 semester hours.

**Option I**

HI 101, 102 Survey of Western Civilization, or HI 103, 104 History of the United States. (6)

One course from the following: AN 111 Elementary Anthropology; GB 101 Introduction to Business; EC 201 Principles of Economics; PS 101 Introduction to Political Science, PS 311 Constitutional Government\*, SO 101 Sociology. (3)

**Option II**

SS 101, 102 Introduction to the Social Sciences (6)

One semester course from the following: HI 101, 102 Survey of Western Civilization, HI 103, 104 History of the United States, PS 311 Constitutional Government\*. (3)

\*Note: only students under the Secondary Curriculum may select PS 311 Constitutional Government.

**IV. Sciences**

For curriculums leading to the B.A. degree in the Liberal Arts, 8 semester hours selected from the following, not more than one course from a group.

For curriculums leading to the bachelor's degree in Education and in Business Administration, 11 semester hours from the following, at least one course in Group 1 and one course in Group 2.

For curriculums leading to the B.S. degree in the College of Liberal Arts and in the College of Applied Arts and Sciences, 14 semester hours from the following, at least one course from each group.

**Group 1. Physical Sciences.**

PL 110 Physical Universe, PL 410 History of the Physical Sciences; CH 111 Elementary Chemistry, CH 115 General Chemistry and Qualitative Analysis; GE 111 Elements of Geography; GL 111 General Geology, GL 114 Historical Geology; PH 121 Descriptive Astronomy, PH 101 Introduction to Physics, PH 112 General Physics.

**Group 2. Life Sciences.**

BI 100 The Living World; BO 100 General Botany; ZO 100 General Zoology.

**Group 3. Mathematics.**

MA 105 Mathematics for General Education, MA 116 Intermediate Algebra, MA 117 College Algebra, MA 118 Trigonometry, MA 119 Algebra and Trigonometry.

**V. Health and Adjustment.**

For all curriculums leading to a bachelor's degree, 7 semester hours.

Physical Education Activity (2)

HE 100 Hygiene (2)

PY 100 Elementary Psychology (3)



## Graduation Requirements

The College grants the following ten degrees: Bachelor of Arts, Bachelor of Science, Bachelor of Science in Engineering, Bachelor of Science in Nursing, Master of Arts, Master of Science, Bachelor of Arts in Education, Master of Arts in Education, Education Specialist, and Doctor of Education. To obtain a second bachelor's degree, the student must do an additional 30 hours of work or more and meet all of the requirements of the particular degree.

### Requirements for the Bachelors' Degrees

*The Unit of Credit.* The semester-hour is the unit of credit. It represents one fifty-minute class exercise per week per semester with two hours of outside preparation or the equivalent in laboratory work.

*Credit Requirements.* A minimum total of 126 semester hours is required for graduation with a bachelor's degree.

*Curriculum and Course Requirements.* Alternate courses may not be substituted for required generalization courses under a particular curriculum, nor may any such courses be waived without approval of the Admissions and Standards Committee. Alternate courses may not be substituted for required courses, in the major, minor or field of specialization under a particular curriculum, nor may any such courses be waived without the approval of the curriculum adviser in the department in which such major, minor or field of specialization is offered.

*Meeting New Requirements.* Students who continue their college work without interruption may graduate under the curriculum requirements and regulations as stated in the catalog for the year the student first registered.

When enrollment is not continuous, the student will be required to meet the curriculum requirements and regulations for graduation as stated in the catalog for the year the student registers for final continuous residence prior to graduation. Any exceptions must be recommended by the student's adviser and approved by the Admissions and Standards Committee.

*First Year English.* Students who fail to pass the First Year English placement examination given during Freshman Week will be required to register for and to complete satisfactorily a course in sub-collegiate English, (English X), 3 hours per week, without credit before they may be admitted to English 101.

*Military and Air Sciences.* All male students entering the college as freshmen or sophomores, unless properly exempted, are required to complete two years of basic military or air science. Male students who elect advanced military or air science, unless properly exempted, shall complete that course as a prerequisite for graduation.

*Physical Education.* All students who are under 25 years of age at the date of entrance and who are classified as freshmen or sophomores, are required to complete, during their first two years in residence, two semester hours of credit in physical education activity courses, unless exempt from this requirement because of physical disability or health factors by the college physician, or because of other reasons by the Admissions and Standards Committee.

*Scholarship Requirements.* In order that a student may be eligible for graduation, his cumulative scholarship index must be 1.80 or better for all work taken while a student at this College. This regulation applies to all students entering Arizona State College in September, 1957 and after. Students who entered Arizona State College prior to September, 1957 will be permitted to graduate with a 1.75 cumulative index providing they have been in continuous attendance.

*Graduation With Honors.* Students who have a cumulative scholarship index of between 3.00 and 3.49 graduate "With Distinction". Students who have a cumulative scholarship index of between 3.50 and 4.00 graduate "With High Distinction". Students to qualify for graduation with honors must have completed at least 60 semester hours in residence at Arizona State College. However, if a transfer student's scholarship for work completed at the previous college or university was of the same high standing as is required for graduation with honors at Arizona State College then the honors will be based on a minimum of 30 semester hours of residence. Arizona State College does not transfer honor points for work completed at other colleges and universities. The cumulative scholarship index is based only upon the quality of work done at Arizona State College.

*Residence Requirements.* A minimum of one year residence as a regular student is required of every candidate for the bachelor's degree, and the final 12 semester hours immediately preceding graduation must be taken in residence. For purposes of record, a year in residence is defined as 30 semester hours of credit earned in on-campus courses offered by regular members of the teaching staff. The phrase, *in residence*, means in regular classes held on the campus or at an established residence center. It has no reference to living in residence halls or in Tempe. Credit earned in correspondence courses cannot be used to meet residence requirements. The 12 semester hours of final residence may be taken during a semester of the regular academic year or during the summer terms. Exception to the residence regulation may be made by the Admissions and Standards Committee. Petitions for an exception must be made in writing and addressed to the Registrar and Director of Admissions.

*Application for Graduation and Teaching Certificates.* Students who plan to complete requirements for graduation at the end of either summer term or the first semester should pay the Application for Graduation fee and file their application for graduation

with the Registrar and Director of Admissions before registering for their final term or semester. Those planning to complete degree requirements during the first semester must file an Application for Graduation prior to April first of the preceding academic year. Those planning to complete requirements for graduation in May should pay the Application for Graduation fee and file their applications for graduation with the Registrar and Director of Admissions before November 15. After November 15 a \$5.00 late fee is charged students planning to graduate in May who do not file the application for graduation by the November 15th deadline. The filing of late applications for May commencement extends from November 16 to the last day of late registration for second semester. Students cannot change their application from one degree to another after the beginning of the final semester's work.

Application blanks are obtained in the Office of the Registrar and Director of Admissions. Candidates who fail to pay the Application for Graduation fee and file applications at the times specified are required to pay the late fee, and may be scheduled for graduation at a later date. Upon filing an application for graduation, a final check on graduation requirements is made by the Office of the Registrar and Director of Admissions. A check sheet showing the remaining requirements for graduation under the curriculum designated in the application is furnished the student as a guide to his final semester's registration.

Applications for teaching certificates should be obtained at the Office of the Registrar and Director of Admissions at the time of filing Applications for Graduation. Applications should be filed promptly after taking the oath of allegiance.

*Graduation Fees.* The Application for Graduation fee is \$10.00 if paid on or before the dates specified in the preceding paragraphs. After that date the fee is \$15.00. If a student is granted permission to receive a degree in absentia, he shall pay an additional fee of \$7.50.

*Attendance at Commencement Exercises.* Candidates for degrees are required to be present at the commencement exercises in the prescribed academic costume. Exceptions to this rule will be made only in extreme cases, and upon petition to the Registrar. The \$7.50 absentia fee is to be submitted at the time the petition is filed. If the petition is not accepted, the fee will then be refunded.

*Financial Clearance.* Before a student may participate in the commencement exercises or receive his diploma, he must obtain financial clearance at the Business Office. Financial clearance indicates that the regular fees, library, dining hall, and all other fees have been paid.

### Requirements for the Master's Degree and the Doctor's Degree

See the section of the catalog headed "The Graduate Division."

# College Services

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## College Guidance Program

Excellent instruction is one of the chief responsibilities of a progressive college. Instruction is excellent to the extent that it fits the abilities, interests, and personality traits of the students. The purpose of the guidance and counseling program of the College is to help teachers and students discover and develop those traits possessed by each student in order that he may carry out such a program of education, both in class and out, as will best fit his individual needs, and will inspire him to complete it with genuine satisfaction, and with the highest degree of achievement possible.

*Orientation.* An orientation program, under the supervision of the Associate Dean of Students in the Division of Student Affairs, is provided for new students at the beginning of the fall term. It includes placement testing, health examinations, social events, introduction of student and administrative officers, explanations by individuals and groups of college services, curricula, and the guidance program. Throughout the year students are aided in adjustment to college life through group programs, individual counseling, work, organizations and clubs, student government, residence hall programs, faculty assistance, and special emphasis in courses.

*The Counseling and Testing Program.* A student's success in college is to a large degree dependent on his ability to adjust to the total college environment—personally, socially, and emotionally. The Division of Student Affairs, through work with individuals and with groups is established to assist in these areas. Personal counseling is directed by the Associate Dean of Students. Personal counseling of women is carried on by the Associate Dean of Students and her staff, and of men by the Dean of Students and his staff. In some cases problems of students are referred to other faculty members or to the agency or service best qualified to help. Likewise, the counseling often begins with the faculty or agency and is referred to the Deans for assistance.

The College Testing Service in the Lyceum Building administers and scores group tests for orientation and guidance purposes, provides a research service for the College, and scores examinations administered by the academic departments. Tests are also administered to individuals by the Research and Testing Service, the Guidance and Counseling Center, The Reading Clinic, and the Psychological Clinic in connection with individual counseling.

*Choosing a Curriculum.* During Freshman Week a number of programs are held to assist students in deciding wisely upon a curriculum. Students who are uncertain as to the curriculum they desire to follow may register for a first year program of basic

studies. This program may be changed at any time the student definitely decides upon a curriculum and major or field of specialization. At this time, each student will be assigned an adviser and have conferences with him concerning his proposed choice of curriculum. Choosing a curriculum is an exceedingly important decision for a student. This choice may be postponed until later in his freshman year, but not later than the beginning of the sophomore year. Ultimately, his happiness and success in college depend, in part, upon a selection suited to his abilities, interest, and personality.

*The Psychological and Reading Clinics.* The Psychological and Reading Clinic Services are part of the program of the Department of Psychology. The clinics have a two-fold purpose: (1) that of providing a laboratory situation in the training of advanced students in the diagnosis and remediation of reading problems, intelligence and aptitude testing, vocational advisement, and problems of adjustment, and (2) of making its services available to the college student, the Training School, and to the public schools, and agencies that need such services to the extent that is practicable. A nominal fee for services will be charged.

*Curriculum Advisers.* When the student has chosen a curriculum and a major or field of specialization, he will then be assigned a permanent adviser whose function is to assist the student in the selection of courses. The student remains under the same adviser as long as he continues under his original curriculum and major or field of specialization. Should the student change his curriculum and major or field of specialization, a new adviser in that field will be appointed. Due to the crowded schedules of each adviser, students are urged to take the initiative in seeking counsel regarding the adequacy of their programs of studies.

## Housing

*Residence Halls for Women.* There are ten halls occupied by women students. These are: Alpha Hall (temporary), Gammage Hall, McClintock "A", McClintock "B", Matthews Hall, North Hall, South Hall, West Hall, Wilson Hall, and Palo Verde Hall. Gammage Hall is a residence hall for freshmen women, McClintock "A" is for upperclass women, and McClintock "B" is an honor hall with special requirements for residency. All other women's halls are general halls.

*Residence Halls for Men.* There are seven halls ordinarily occupied by men: East, Hayden, Irish, La Ramada (temporary), M. O. Best "A" and "B", Haigler, and Sahuaro Halls.

*Apartments.* The following temporary facilities are available: sixty-six Victory Village Apartments; sixteen Palm Grove Apartments, and twenty apartments for faculty members. All are located on the campus excepting Palm Grove Apartments which are one mile south of Tempe.

*Reservations.* Accompanying the notification from the Registrar and Director of Admissions that admission has been granted, is an application form for reservation of residence hall space. This should be filled out immediately and mailed to *Housing Office*, together with a deposit of \$10.00 for residence halls. A \$10.00 deposit is required for an apartment accommodation. Students are placed on reservation lists according to date of receipt of deposit.

Preferences of residence halls may be stated at the time of making reservations. Assignments to halls are made by the Housing Clerk in line with policies established in the Division of Student Affairs. Assignments to the honor hall are made through the office of the Associate Dean of Students. Room assignments are made by the Head Residents under the supervision of the Dean of Students in the men's halls and the Associate Dean of Students in the women's halls.

Residence in halls, sorority or fraternity houses is restricted to students registered for 12 or more units of regular work. Any exception must be approved by the Associate Dean of Students or the Dean of Students. The College reserves the right to change the residence of any student or to deny or cancel residence accommodations of any student in cases where such action is deemed desirable.

*Occupancy.* Housing accommodations are available for occupancy one day preceding Freshman Week. Students are expected to vacate accommodations by noon Saturday of the last week of school. Students are admitted to the assigned housing accommodations only upon presentation of the proper assignment card to the head resident or apartment supervisor.

*Hall Facilities.* All student rooms are provided with electric light, steam heat, and are furnished with a study table, a dressing table or chest, and chairs. In some halls, sleeping porches are used the year round; others have suites which include sleeping quarters. There is a laundry room in each residence hall furnished with ironing boards for the laundering of personal belongings.

*Residence Regulations.* No single college influence may contribute more to the development of the personality and character of a student than that of residence hall life. The halls are so equipped and managed as to secure the maximum values at a minimum cost. No cooking of any kind is permitted in students' rooms. Electrical appliances such as irons, TV sets, percolators, grills are to be used only in lounges, kitchens, and utility rooms. *Vocal or instrumental music may not be practiced in any of the halls.* Arrangements for such practice may be made through the Music Department. If radios are used, they must be adjusted so as not to interfere with the rights of others. No pets are permitted in the halls. Nominal dues are collected in each hall by the respective Hall Councils. This fee may not be refunded.

*Residence Regulations for Women Students.* Young women may be absent from the halls overnight only with the written consent of their parents, which must be on file with the Associate Dean

of Students and the head resident at the time of departure. On these occasions residents sign out, indicating where they may be reached in case of emergency. Other regulations for women students appear in Associated Women Students' Handbook, "Co-ed Cues."

*Personal Equipment.* The following list of equipment is the minimum which students should bring with them when entering a hall: blankets and comforts for a single bed, one bedspread, dresser scarf, bathrobe, soft-soled slippers, and washable laundry bag. All should be clearly marked with the name of the student. *The college provides and launders sheets and pillow slips.*

*Regulations Concerning Guests.* Guests may be accommodated in residence halls when space is available under the following conditions: (a) that the permission of the head resident has been secured; (b) that guests do not accept invitations from residents for the first four nights of the week or during examination time unless absolutely necessary; (c) that guests do not ask for accommodations for more than a three-day period. Visiting student groups may be accommodated when previous arrangements are made in the Office of the Division of Student Affairs. A nominal rental fee is charged for these accommodations.

*Care of Halls and Apartments.* The College attempts to furnish comfortable and attractive living conditions for students. Students are expected to cooperate by keeping them so. Should any damage, beyond the usual wear, occur to the decorations and furniture of a room, the cost of redecoration or repair will be charged to the occupants of the room.

*Housing Regulations for Undergraduate Women Students Under 23 Years of Age.* Undergraduate women students under 23 years of age are required to live in the college residence halls and are expected to carry an academic load of at least 12 semester hours. Exceptions are made for those women who live with their parents, guardians, or close relatives, or who work in a private home for their room and board.

In the event that all women's residence halls are filled, upper class students may obtain permission to arrange for off-campus housing which meets with their parents' approval by filling out the appropriate forms in advance in the office of the Associate Dean of Students. Such off-campus housing is not officially under college inspection or supervision; therefore, the college can not assume responsibility for students living off-campus. However, the college reserves the right to move students whose conduct or quarters are found to be undesirable.

Graduate students and women over 23 may live in the residence halls if space is available, providing they conform to all regulations of the residence units in which they live.

Married women may live in the residence halls only with special permission of the Associate Dean of Students. Students in women's residence halls must report changes in marital status immediately.

## Health Service

*Student Health Service.* This service is maintained for the purpose of constant supervision over the health of students. It is administered under the Division of Student Affairs. A dispensary and infirmary are staffed by a consulting physician and registered nurses. The Student Health Service is located on Normal Avenue.

*Health Examination.* The health examination is required of all students prior to registration. A physician's certificate of small-pox vaccination within the past four years must be furnished at the time of the examination. Students are urged to have all remediable defects, such as eyes, ears, teeth, tonsils, etc., corrected in advance of matriculation to prevent possible loss of time from studies. The Student Health Service makes recommendations concerning activities of students in which health may be a factor. Restricted class schedules or physical activity programs based on the findings of the health examination are recommended. See the item headed "Health Examination" under the section on *Admission to College* for further details of the health examination.

*Dispensary and Infirmary Treatment.* Dispensary services are available during regularly posted hours and at any hour for emergencies to all regularly registered students. No illness will be cared for in the residence halls, nor will any prescription be made for a student not reporting in person to the Health Service. Infirmary care is given according to need as determined by the staff. No student may have more than one week's bedside care without cost. Contagious diseases must receive care off-campus immediately following diagnosis.

*Illness or Injury Must Be Reported.* Any illness or injury must be reported to the Student Health Service without delay. A Campus resident is required to report illness immediately to the head resident of his or her hall. Failure to do so may result in his being asked to leave the hall. Before leaving the campus because of illness, students are to report to the Student Health Service. Upon their return they are to report for approval to re-enter classes. In all cases diagnosed as contagious, the student, on his return to the College, will present to the college nurse a written statement from the attending physician. Health reports are sent to the family physician upon request of the student.

*Financial Responsibilities.* With the payment of the health fee of \$4.00 each semester, all regularly registered students are entitled to student health service care according to established policies. Students may be referred to consultant specialists when the college physician considers it advisable, but such fees must be borne by the student. When hospitalization or surgical attention is considered necessary, the College assumes no financial responsibility. Parents are consulted in advance of hospitalization if at all possible. A fee of \$4.00 a day is charged for Infirmary care after one week.



## Placement Center

The Placement Center is maintained to assist undergraduates, graduates, and alumni in obtaining employment according to their training, ability, and experience. It is the purpose of the Center to serve the State and region by providing adequately trained personnel for business, industry, government and education. Although the Placement Center does not guarantee placement, every effort is made to aid students and those in the field who desire placement assistance. Candidates may enroll by filling out the appropriate blanks. Upon enrolling, candidates receive full information and instructions relative to securing employment. Complete records are kept on permanent file in the Placement Center. *Yearly renewal keeps credentials in active file.*

*Student Placement.* The Placement Center aids students attending college in securing part-time employment, both on and off the campus, which tends to supplement their educational goals. All students who are interested in on or off campus placement should register with this office.

*Teacher Placement.* The Placement Center assists graduating students and alumni in obtaining teaching positions. It seeks, at the same time, to serve the best interests of the superintendents and school trustees of the State who desire to secure teachers adapted to the needs of their particular school.

*Commercial Placement.* The Placement Center also serves graduating students and alumni who are interested in commercial, industrial, and governmental placement. Effort is made to place students in their chosen fields, and at the same time, aid employers to obtain properly trained personnel.

All correspondence should be addressed to the appropriate division in the Placement Center.

## Alumni Association

*Membership.* The Alumni Association was organized under the leadership of President E. L. Stormont, in June, 1894. Keeping pace with the tremendous growth of the College, the association employed a full-time executive secretary in September, 1947, and has embarked on a broad program of activities with a permanent staff now expanded to three members and a distinguished board of officers and directors. There are about 13,000 graduates including the class of 1956. All students become active members when they pay their graduation fee. All students who have attended the College at least one semester are listed as associate members.

*Memorial Student Union Campaign.* The Alumni Association sponsored a fund drive to raise \$350,000 in public contributions toward a \$1,300,000 Memorial Student Union Building for the College. Total proceeds from the campaign were \$439,322.06. This building was dedicated in February, 1956, and Charles A. Stauffer, '01, was General Chairman of the campaign.

*Endowment Fund.* Under the leadership of the late Clarence M. Paddock, '03, and Leona M. Haulot, '02, the Association raised an endowment fund of \$10,000.00 for the assistance of worthy students. The fund has now increased to more than \$30,000.00, and more than 500 students have received aid from the fund. Loans are made only to juniors, seniors or graduate students.

*Alumni Housing.* To meet the need of housing returning veterans and their families, the Alumni Association has financed a \$40,000 emergency housing development on campus.

*Alumni Magazine.* The Association's official magazine, the *Statesman*, is published quarterly for all active members. Present circulation is 12,000.

*Alumni Induction Ceremony.* This ceremony is held annually during the Commencement Ceremony. Members of the graduation class are inducted by the President in an impressive ceremony and receive alumni membership cards.

*Alumni Register.* The Alumni Association maintains a card file of the names, addresses and occupations of all active members of the Association. This is a difficult task because names and addresses are constantly changing. Alumni and friends can be of real service by sending a post card to the Alumni Secretary giving changes in names and addresses.

*Officers of the Alumni Association, 1956-1957*

Hascall Henshaw, '41 and '49 MA, President.....	Tempe
Kenneth Clark, '26-'28, First Vice President.....	Tempe
Meryl Furrey, '34, Second Vice President.....	Tucson
Howard Shepard, '49, Third Vice President.....	San Francisco
Patsy (Page) Schwalbe, '51, Secretary.....	Mesa
George W. Morrell, '41, Treasurer.....	Tempe
Robert Lamparter, '50, Director.....	Phoenix
Lovatt F. E. Burges, '47 and '53 MA, Director.....	Phoenix
Marvin Palmer, '38, Director.....	Casa Grande
Sherman R. Payne, '48, Director.....	Phoenix
Pat Whelan, '47, Director.....	Tempe
Charles Stidham, '42, Director.....	Phoenix
John R. Sandige, '14, Trust Officer.....	Phoenix
Sidney B. Moeur, '14, Legal Advisor.....	Phoenix
James W. Creasman, '35, Executive Secretary.....	Tempe

# Student Affairs

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## Student Government

*Associated Students.* Every student of the College is automatically a member of the Associated Students. The Board of Regents, the President, and the faculty challenge every student to accept his individual responsibility for stimulating and regulating student activities and customs, and for promoting the intellectual, moral, and social welfare of all students in a truly democratic manner. These objectives are attained by encouraging all students to participate in the government of the College.

Student government at ASC is unique, being patterned after our national and state governments, with three separate branches—legislative, executive, and judicial. Besides providing for the efficient functioning of Associated Students, our student government establishment effectively provides opportunity for developing the responsible citizens so much in need in local, state, and national affairs.

The Student Senate passes the laws governing ASASC, its boards, and agencies. The Executive Council, with eleven members, five of whom are appointed, carries out those laws. The Student Court composed of five Justices, passes on the constitutionality of laws and interprets the constitution.

Under authority delegated them by the President of the College, AWS sets and enforces social standards and regulations regarding campus dress, coordinates women's student government through residence hall councils and the off-campus women's organization, establishes hours for women students, and formulates and administers policies deemed essential to promote a desirable group living experience.

*The Memorial Student Union.* The headquarters for all Associated Student Activities are in the Union Building. Here many student activities take place. This is indeed the instructional building for the out-of-class educational program.

*The Student Activities Program.* The college calendar includes many and varied programs and functions held on the campus and elsewhere. These include athletic events; social events including dances, dinners, banquets, teas; entertainment and lecture series; music and other cultural gatherings. Both men's and women's residence halls play an important part in carrying out the activity program with the advice of carefully selected personnel officers and faculty members.

## Student Organizations

*Program.* A wholesome, integrated program for the college student is provided through student organizations. According to the individual interest and available time, any student may choose those activities which meet his desire for congenial companionship, his need for group security, his need for recognition, his need for creative effort, his need for growth—physically and socially—or supplement his classroom work in the many activities which are an extension of classroom programs.

*Official Approval.* Official approval of organizations may be withdrawn at any time the organization fails to comply with rules and regulations of Associated Students. At least twice each year organizations are requested to submit the names of officers and other basic information. All approved organizations must have a copy of their constitution on file in the Office of Student Affairs. Organizations which do not meet these minimum requirements are removed from the official list which appears annually in the college catalog. Mail boxes are provided for all officially approved organizations in the Memorial Union Building.

*Scholastic Requirements.* In order to be eligible for admission to membership in any student organization, a student must have a scholarship index of 2.00 or better in all courses carried for the semester immediately preceding. Any member of such an organization whose semester report shows a scholarship index of less than 2.00 may be suspended from active work in the organization for one semester.

### Honorary Groups

#### For Men

*Alpha Delta Sigma* (National advertising honorary fraternity)

*Alpha Mu Sigma* (Honorary service fraternity)

*Arnold Air Society* (National honorary Air Force fraternity for advanced cadets.)

*Blue Key* (National honorary service)

*Delta Sigma Pi* (National business administration professional fraternity)

*Kappa Kappa Psi* (National band fraternity)

*Pershing Rifles* (National professional honorary for R.O.T.C. cadets)

*Phi Delta Kappa* (National professional education fraternity)

*Phi Epsilon Kappa* (Men's physical education fraternity)

*Phi Eta Sigma* (National honor society for freshman men)

*Sabre Air Command* (National honorary society for Basic Air Force R.O.T.C. Cadets)

#### For Women

*Alpha Pi Epsilon* (National secretarial honor organization)

*Angel Flight* (Honorary AFROTC Cadet officers for women)

*Beta Chi Epsilon* (Home Economics)

*Orchesis* (Dance honorary)

*Pleiades* (Honorary service organization)

*Racquet Club* (Tennis)  
*Spurs* (Honorary service organization)  
*Tau Beta Sigma* (National band sorority)  
*Women's "A" Club* (Honorary association in sports)

**For Both Men and Women**

*Alpha Beta Alpha* (National library science fraternity)  
*Alpha Mu Gamma* (Foreign language)  
*Beta Beta Beta* (Biology)  
*Gamma Theta Upsilon* (National honorary professional geographic fraternity)  
*Geology Club of Arizona State College*  
*Kappa Delta Pi* (National honorary education society)  
*Mu Rho Alpha* (National music fraternity)  
*Phi Kappa Phi* (National scholarship honor society)  
*Pi Delta Epsilon* (National journalism honorary)  
*Pi Kappa Delta—Arizona Beta* (Forensic fraternity)  
*Pi Omega Pi* (National commerce honor society)  
*Psi Chi* (Psychology)  
*Theta Chi Epsilon* (Honorary art fraternity)

**Special Interest Groups**

**For Men**

*Arizona State Men's Glee Club*  
*ASC Varsity Rifle Club*  
*Off-Campus Men*  
*Veterans Club*

**For Women**

*Association for Childhood Education*  
*Off Campus Women*  
*Par Busters* (Women's golf)  
*Pom Pon Girls*  
*Women's Athletic Association*  
*Women's Physical Education Major-Minor Club*

**For Both Men and Women**

*American Association of Engineers*  
*American Chemical Society*  
*Arizona State Student Marketing Club*  
*ASC Fencing Club*  
*ASC Gymnastic Club*  
*Astronomy Club*  
*Devils and Dames* (Square dance)  
*Future Teachers of America*  
*German Verein*  
*International Relations Club*  
*Junior American Institute of Architects*  
*La Liga Panamericana* (Promotes friendly relations among those interested in things Spanish)  
*Le Cercle Francais* (French club)  
*Los Conquistadores* (Promotes the welfare of the Spanish-speaking students)

*Mask and Sandal* (Drama)  
*Russian Circle*  
*Sun Devil Band*  
*Sun Devil Rodeo Association*  
*Young Republicans of Arizona State*

### Religious Groups

*Religious Council.* Composed of representative students from all denominations. Promotes religious programs, and fosters religious living.

#### For Men

*Delta Phi Honorary Fraternity* (L.D.S. returned missionaries)  
*Lambda Delta Sigma - Phi Alpha Chapter* (L.D.S.)

#### For Women

*Lambda Delta Sigma - Phi Omega Chapter* (L.D.S.)

#### For Both Men and Women

*Baha'i World Faith Club*  
*Baptist Student Union*  
*Baptist Young Peoples Union*  
*Campus Crusade for Christ* (non-denominational)  
*Campus "Y"*  
*Canterbury Club* (Episcopalian)  
*Christian Science Organization*  
*Congregational Fellowship*  
*Disciples Student Fellowship* (Community Christian Church)  
*Hillel Foundation* (Jewish)  
*Lutheran Student Association*  
*Martin Luther Society*  
*Newman Club* (Roman Catholic)  
*Wesley Foundation* (Methodist)  
*Westminster Fellowship* (Presbyterian)

### Sororities and Fraternities

*Panhellenic Council.* The Panhellenic Council is composed of representatives of each sorority and the Associate Dean of Students. Sponsors are members ex-officio.

*Junior Panhellenic Council.* The Junior Panhellenic is composed of representatives from the pledge class of each sorority.

*Sororities.* The following Greek letter societies carry on the traditional objectives of each group:

*Alpha Delta Pi* (national)  
*Alpha Epsilon Delta* (local)  
*Alpha Sigma Alpha* (national)  
*Chi Omega* (national)  
*Gamma Phi Beta* (national)  
*Kappa Delta* (national)  
*Sigma Sigma Sigma* (national)

*Interfraternity Council.* Composed of two elected representatives from each member fraternity and the faculty adviser. The Interfraternity Council is the liaison between individual fraternities and the Associated Students and College administration.

*Fraternities.* The following Greek letter societies carry on the traditional objectives of each group.

- Alpha Epsilon Pi* (national)
- Alpha Gamma Sigma* (Colony of Alpha Gamma Rho)
- Alpha Tau Omega* (national)
- Delta Chi* (national)
- Delta Sigma Phi* (national)
- Kappa Alpha Psi* (national)
- Lambda Chi Alpha* (national)
- Phi Delta Beta* (Petitioning Phi Delta Theta)
- Phi Kappa* (Colony of Phi Kappa National)
- Phi Sigma Kappa* (national)
- Pi Kappa Alpha* (national)
- Sigma Nu* (national)
- Sigma Phi Epsilon* (national)
- Sigma Pi* (national)
- Tau Kappa Epsilon* (national)
- Theta Chi* (national)

## Special Group Activities

### Musical Activities

Opportunities are offered to all college students for expression of musical talent by membership in the rehearsals and concerts of the performing organizations maintained by the Music Department. College credit is given for regular work in the Orchestra, Bands, Choral Union, Concert Choir, Opera Workshop and Men's Glee Club. Students in applied music are also presented in departmental and public recitals.

### Physical Education and Recreation Activities

Play activities are carried on under the sponsorships of the men's and women's division of the Department of Health, Physical Education and Recreation. These activities are generally included to as intramurals. In addition, there is the program of intercollegiate athletics under the direction of the Athletic Department.

*Facilities.* The women's department is housed in the B. B. Moer Activity Building. The men's division is located in the new Men's Physical Education Building which also provides quarters for the Department of Intercollegiate Athletics. Each division has its own athletic field. In addition, ten concrete tennis courts are available. The outdoor part of the intercollegiate program makes use of Goodwin Stadium. Basketball and other indoor events are provided for in the new gymnasium and gym annex.

*Intramurals.* Each division of the Department of Health, Physical Education and Recreation maintains an excellent program of intramurals open to all students. The women's division offers competition in volleyball, softball, hockey, basketball, golf, badminton, tennis, archery, as well as folk, tap, and modern dance.

The women's division also sponsors sports days and tournaments with other colleges and universities. The men's division maintains such sports as tennis, volleyball, table tennis, cross-country, touch football, badminton, horseshoes, basketball, track, softball, golf and swimming. In addition, a beginning is being made in co-recreational activities.

*Intercollegiate Athletics.* The College is a member of the Border Conference and is represented in such sports as football, basketball, track and field, baseball, tennis, and golf. The purpose of the program of intercollegiate athletics at The Arizona State College at Tempe is to provide the following important educational experiences, all of which the faculty of the institution believe are fundamental to the American way of life: (a) To train students in legitimate methods of good sportsmanship, in competition, and in the will to win. (b) To aid in character development which includes cooperation and teamwork, leadership qualities, group loyalty, clean living and right thinking. (c) To contribute to the development of institutional morale, loyalty and school spirit. (d) To supply wholesome recreation for the participants and other students. (e) To serve as a laboratory for the professional courses of those interested in physical education and coaching as a career.

### Speech and Dramatics

*Forensics.* The College offers an extensive program of intramural and intercollegiate forensics, including debate, extemporaneous speaking, oratory, impromptu speaking, discussion, and radio speaking. This activity provides one of the few ways in which the students and the school can establish prestige in academic competition. Each year rival speakers from many of the nation's major colleges and universities are met. The school is affiliated with three forensic leagues—The Arizona Speech League, which sponsors an annual tournament among six colleges in the State; the Western Association of Teachers of Speech, which sponsors a fall tournament for all western states; and the Pi Kappa Delta League, which holds a biannual national tournament, as well as tournaments in the western region. Students become eligible for membership in Pi Kappa Delta, national honorary speech fraternity, by a stipulated degree of proficiency in forensics.

*Dramatics.* The work in dramatics is designed to accomplish the following objectives: (1) To develop talent through participation in plays, recitals, and production. (2) To fulfill the social and therapeutic functions of dramatics in cases of defective personality. (3) To improve audience standards of entertainment. Active participation in dramatics may lead to an invitation to membership in Mask and Sandal, the local dramatics club, or Alpha Psi Omega, national dramatic fraternity.

### Radio and Television

*Station KASC.* For the training of students in radio skills, the Radio-Television Bureau maintains station KASC, a carrier current station run by and for the students of the College. It is heard at 660 on any AM radio dial on the ASC Campus. Programming 70



hours of live programs a week, station KASC provides students with supervised practical experience in the operation of a radio station. Students of all class standings work at the jobs of writing, producing and presenting programs over station KASC, which is completely equipped with the finest of professional radio equipment. Upper class students hold top station positions of Station Manager, Program Director, and Sales Manager.

*Television Programs.* As part of its off-campus educational program, the College prepares and produces regular educational television series. These programs are produced by the Radio-Television Bureau in the television facilities of the Engineering and Technology Center, and micro-waved to the transmitters of the local commercial TV stations. Students majoring in Radio-Television, and others interested in participating on an extra-curricular basis, assist in the production of these programs. Courses in radio and television production are closely related to the production of these television programs as well as to the operation of station KASC. Student participation in the television programs includes art work, properties, dramatic performances, writing, directing, and other details involved in presentation of television programs.

## Student Publications

*The State Press.* Under the combined auspices of the Administration, the Department of Journalism, and the Associated Students, there is published throughout the college year a college-owned, student-operated newspaper, the *State Press*. It is distributed free on-campus, student subscriptions being included in the activity fee. Staff work on the *State Press* rates highly as a student activity, and also serves as professional training for students enrolled in the various classes in Journalism. In general charge of this and other student-operated publications is the Board of Publications, equally representing the Associated Students and the faculty of the College, with a member of the Journalism faculty as its chairman. The Board selects the student editors, who in turn select their own student staffs and exercise the editorial responsibility within broad standards established by the Board. Financial and budgetary matters are under the control of the Associated Students.

*Sahuaro.* The college yearbook, *Sahuaro*, likewise is student-edited and published under the auspices of the student-faculty Board of Publications. Students with high school yearbook experience, art students, and future teachers planning to supervise high school publications, find *Sahuaro* staff work an interesting and improving activity. Individual student portraits, by classes, are published without charge; campus organizations pay a moderate fee for their page-space. The editorship, advisership, and financial management are organized similarly to those of the *State Press*. Financial support is derived from sales, advertising, page fees, and an Associated Students appropriation.

# College of Liberal Arts

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## Purpose

The College of Liberal Arts aims to give the student an opportunity to secure a well-rounded liberal education. Life in a changing world calls for a broad training and an appreciative understanding of the varied elements in our own and other cultures. Today the peoples of various nationalities, languages, religions, and vocational interests intermingle in a human society increasingly interdependent and bound together by improved means of communication, transportation, trade, and governmental cooperation. Peaceful and effective living in such a world requires flexibility in personal equipment and ability to make quick and intelligent adjustments in the social as well as the physical environment.

The liberally educated person will have facility with his own, and preferably one or more other languages; he will possess an understanding of himself and a broad knowledge of his physical, social, moral, and spiritual environment; he will be able to deal effectively with the problems of his day in the light of the most reliable and tested knowledge of his time; he will have an appreciative understanding of the fine arts and find enjoyment in them; he will be able to live and act in the home, the local community, the nation, and the international community as an informed, responsible, and understanding human being.

The degree requirements are so arranged as to acquaint the student with the main fields of human knowledge and, at the same time, to bring to light his special aptitudes and interests. Although emphasizing breadth of training, the curriculums permit such a degree of specialization as to prepare the student for work in a professional school, for graduate study, or for the duties of a vocation. Within the limits of the curriculum chosen, the student may elect to take a part of his work among the course offerings of the Colleges of Education, Business Administration, and Applied Arts and Sciences.

## Organization

The College of Liberal Arts is divided as follows:

### **DIVISION OF BEHAVIORAL AND SOCIAL SCIENCES**

Department of History and Political Science  
Department of Psychology and Philosophy  
Department of Sociology and Anthropology

### **DIVISION OF FINE ARTS**

Department of Art  
Department of Music

**DIVISION OF HEALTH, PHYSICAL EDUCATION AND RECREATION**

Department of Air Science  
Department of Health, Physical Education and Recreation  
Department of Intercollegiate Athletics  
Department of Military Science and Tactics

**DIVISION OF HOME ECONOMICS**

Department of Home Economics

**DIVISION OF LANGUAGE AND LITERATURE**

Department of English  
Department of Foreign Languages  
Department of Humanities  
Department of Mass Communications  
Department of Speech and Drama

**DIVISION OF LIFE SCIENCES**

Department of Botany  
Department of Zoology  
Poisonous Animals Research Laboratory

**DIVISION OF PHYSICAL SCIENCES**

Department of Chemistry  
Department of Geography  
Department of Geology  
Department of Mathematics  
Department of Physics and Astronomy

**SCHOOL OF NURSING**

## Degrees

**Bachelor of Arts and Bachelor of Science Degrees**

The College of Liberal Arts offers three bachelor's degrees: the Bachelor of Arts, the Bachelor of Science, and the Bachelor of Science in Nursing. The first two are similar in that both require 126 semester hours of credit for graduation and call for a considerable distribution of studies; yet they also permit of specialization. Indeed, they require sufficient stress in major fields to insure some degree of mastery in particular fields. In general, the distinction between the curriculums offered for these two degrees lies in the fact that for the Bachelor of Arts degree, emphasis is placed on a broader, humanistic program, whereas for the Bachelor of Science, greater emphasis is placed on a special scientific field.

The School of Nursing offers the degree of Bachelor of Science in Nursing. This is a four-year program requiring 126 semester hours of credit for graduation. It is the intent of this program not only to permit the student to receive her bachelor's degree in a collegiate program of nursing which includes a broad back-

ground in general education, but also to provide the learning experiences which will help the student develop the professional nursing skills necessary to function in any branch of nursing.

For further information on this program consult the bulletin of the School of Nursing.

### Master of Arts and Master of Science Degrees

A graduate program consisting of a minimum of 30 semester hours of approved work in a special field of study leads to the degree of Master of Arts or Master of Science. These degrees are offered in the following fields:

Degree	Subject Field
Master of Arts	English
	History
	Mathematics
	Psychology
	Spanish
Master of Science	Biological Sciences
	Chemistry
	Physics

For specific reference to these programs, see page 205 of this catalog.

## Bachelor of Arts Degree Curriculum

The curriculum for the degree of Bachelor of Arts is designed to give the student a broad, general background in the principal fields of human knowledge and a reasonable amount of specialized training in a selected area. It is divided into three parts:

### General Education

1. *Communications* ..... 8 sem. hours  
     EN 101, 102..... 6 sem. hours  
     SE 120 or 200..... 2 sem. hours
2. *Humanities* .....14 sem. hours

### Option III

- One Foreign Language..... 8 sem. hours  
 Six semester hours to be selected from the following, not more than one course in a subject: 4-AC 100; AH 102, 211, 212; EN 103, 201, 202, 341, 342; MU 105, 107; PI 101, 228 ..... 6 sem. hours

### Option IV

- One Foreign Language..... 8 sem. hours  
 HU 201, 202..... 6 sem. hours

3. *Social Sciences*..... 9 sem. hours

**Option I**

HI 101, 102 or HI 103, 104..... 6 sem. hours

One course to be selected from

the following: AN 111; 3-GB

101; 3-EC 201; PS 101; SO 101 3 sem. hours

**Option II**

SS 101, 102 ..... 6 sem. hours

One course to be selected from

the following: HI 101, 102,

103, 104 ..... 3 sem. hours

4. *Sciences* ..... 8 sem. hours

At least one course to be selected from each of two of the following groups:

Group 1.—Physical Sciences—

PL 110, 410; CH 111, 115; GE 111; GL 111, 114; PH 101, 112, 121.

Group 2.—Life Sciences—

BI 100; BO 100; ZO 100.

Group 3.—Mathematics—

MA 105, 116, 117, 118, 119.

5. *Health and Adjustment* ..... 7 sem. hours

Physical Education Activity.... 2 sem. hours

HE 100 ..... 2 sem. hours

PY 100 ..... 3 sem. hours

Since the introductory courses designed to meet the general education requirements are necessarily elementary, the student is expected to take most of them in his first two years. He will then be able to devote most of his last two years to advanced work in the field of his special interest.

A student is exempt from general education courses in his major field. Students of nursing are exempt from general education courses in the sciences and from HE 100, Hygiene. Majors in biological science are exempt from HE 100, Hygiene. Men in ROTC and students taking two or more semesters of marching band are required to have but one semester hour of physical education activity.

**Major Requirements**

A major shall consist of from 45 to 50 semester hours of credit. At least 24 of these semester hours must be in a single subject field, and at least 15 must be in one or more different but related subject fields.

The majors in the following list which are marked with an asterisk (\*) require a four-year sequence of courses. A student

who elects them after the first semester of his college career must therefore expect to spend more than four years in attaining the bachelor's degree. Majors not marked with an asterisk can be completed in three years or less, and may therefore be elected at the beginning of the sophomore year with no loss of time.

<b>Division</b>	<b>Major</b>
Behavioral and Social Sciences	Anthropology Economics History Philosophy Political Science Psychology Sociology Social Sciences Social Welfare
Fine Arts	Fine Arts, with emphasis in Art History General Art Painting Sculpture Music
Health, Physical Education and Recreation	Health Education Physical Education Recreation
Home Economics	Clothing, Textiles, and Related Arts Family Life and Child Development Foods and Nutrition
Language and Literature	Dramatics English *French *German Journalism Radio-Television *Spanish Speech
Life Sciences	*Botany *Entomology *General Biology *Zoology
Physical Sciences	*Chemistry Geography Geology Mathematics Physics
Inter-Divisional	General Studies

**Elective Courses**

Sufficient elective courses from the entire offering of the College will be chosen by the student in order to complete 126 semester hours required for graduation. A student may group 15 or more of his elective hours to form a minor if he desires.

**Four-year Curriculum Outline**

The following is a suggested outline to indicate to the student one way in which the general education, major, and elective requirements may be worked into a four-year pattern of study. Except in unusual cases, most general education requirements should be completed during the first two years of study.

**FIRST YEAR**

First Semester		Hours	Second Semester		Hours
EN 101 First Year English.....		3	EN 102 First Year English.....		3
AS 101 Basic Air Science or			AS 102 Basic Air Science or		
MS 101 Basic Military Science	1.5		MS 102 Basic Military Science...	1.5	
PE 101 Freshman Phys. Education	.5		PE 102 Freshman Phys. Education	.5	
Foreign Language.....		4	Foreign Language.....		4
Science or Mathematics.....	3 to 4		Science or Mathematics.....	3 to 4	
Humanities or Social Science			Humanities or Social Science		
Elective .....		2 to 4	Elective .....		2 to 4
*HE 100 Hygiene .....		2			
		15½ to 17½			15½ to 16

**SECOND YEAR**

First Semester		Hours	Second Semester		Hours
AS 201 Basic Air Science or			PY 100 Elementary Psychology.....		3
MS 201 Basic Military Science	1.5		SE 120 or 200.....		2
Physical Activity .....	.5		AS 202 Basic Air Science or		
*HE 100 Hygiene .....	2		MS 202 Basic Military Science...	1.5	
Major .....	3 to 4		Physical Activity.....	.5	
Science or Math. Elective.....	2 to 3		Major .....	3 to 6	
Social Science or Humanities			Social Science or Humanities		
Elective .....		3	Elective .....		3
Other Electives to complete		15 to 17 hours.	Other Electives to complete		15 to 17 hours.

**THIRD YEAR**

First Semester		Hours	Second Semester		Hours
Social Science or Humanities			Social Science or Humanities		
Elective .....		3	Elective .....		3
Major .....		3 to 9	Major .....		3 to 9
Other Electives to complete		15 to 17 hours.	Other Electives to complete		15 to 17 hours.

**FOURTH YEAR**

First Semester		Hours	Second Semester		Hours
Major .....		3 to 9	Major .....		3 to 9
Other Electives to complete		15 to 17 hours.	Other Electives to complete		15 to 17 hours.

Many students are not ready to choose a major at the time they enter college. For such students a first year program of basic studies has been devised. Successful completion of this program will qualify a student to enter upon any of the three-year majors at the beginning of his sophomore year with no loss of time. This program may be substituted for the first year program given in the above outline.

First Semester		Hours	Second Semester		Hours
EN 101 .....		3	EN 102 .....		3
AS 101 Basic Air Science or			AS 102 Basic Air Science or		
MS 101 Basic Military Science...	1.5		MS 102 Basic Military Science...	1.5	
Science or Mathematics.....	3 to 4		Science or Mathematics.....	3 to 4	
Foreign Language.....		4	Foreign Language.....		4
*PY 100 .....		3	*SO 101 .....		3
PE 101 .....		.5	PE 102 .....		.5
		15 to 16			15 to 16

\*May be taken either semester.

**Divisional Major Requirements****Behavioral and Social Sciences**

- (1) *Anthropology*: A major in anthropology shall consist of 45 semester hours.  
Required courses: AN 111, 221, 341, 411, 421.  
Optional courses: 18 hours selected from the following: AN 231, 312, 321, 331, 332, 412; SO 213, 321, 331 332, 441; PY 362, 367, 421; GL 113, 114; GE 111, 322, 323; BI 340; ZO 100, 271; HI 338, 341, 471, 472. An additional thirteen hours must be completed in courses related to the subject of anthropology, selected by the student in consultation with his adviser.
- (2) *Economics*: A major in economics shall consist of 45 semester hours.  
Required courses: 3-EC 201, 202, 311, 401.  
Optional courses: 18 hours, selected with the approval of the adviser, from the following: 3-MK 251; 3-FI 301, 331, 441; 3-GB 321, 341; 3-EC 321, 331, 351, 412, 441, 453, 470. Fifteen hours must be completed in courses related to the subject of economics selected by the student in consultation with his adviser.
- (3) *History*: A major in history shall consist of 45 semester hours.  
Required courses: HI 101, 102, 103, 104, 311. An additional 6 hours of lower division courses must be completed, and 10 hours of upper division courses, chosen from courses in history listed in the college catalog. Fifteen hours must be completed in courses related to the subject of history, selected by the student in consultation with his adviser.
- (4) *Philosophy*: A major in philosophy shall consist of 45 semester hours. A minimum of 27 hours shall be taken in philosophy, which includes the philosophy of education and symbolic logic. The remaining hours may be taken in related fields with the approval of the adviser.
- (5) *Political Science*: A major in political science shall consist of 45 semester hours.  
Required courses: PS 111, 112, 113, 221, 231. An additional 15 hours of upper division courses must be chosen from courses in political science listed in the college catalog. Fifteen hours must be completed in courses related to the subject of political science, selected by the student in consultation with his adviser.
- (6) *Psychology*: A major in psychology shall consist of 45 semester hours in addition to the prerequisite courses SO 101, PY 100 and BI 100, which may be taken in partial



fulfillment of the general education requirements in the social studies and sciences.

Required courses: PY 341, 343, 367, 492. An additional 18 hours of psychology selected from the course offerings listed in the catalog.

Optional courses: 15 hours, selected with the approval of the adviser, from the following: ZO 102; BI 340; 3-EC 321; 3-MG 311; SE 211, 421; EN 313; MA 121; PI 211, 212, 221, 228, 231; SO 213, 332, 441; AN 111, 411.

- (7) *Sociology*: A major in sociology shall consist of 45 semester hours.

Required courses: SO 101, 213; SW 211; AN 111; PY 367. An additional 15 hours of upper division courses must be completed, chosen from courses in sociology listed in the catalog. AN 411, 412 and PY 492 may be included by the student in the above group. An additional 15 hours must be completed in courses related to the subject of sociology selected by the student in consultation with his adviser.

- (8) *Social Science*: A major in social science shall consist of 45 semester hours selected by the student in consultation with his adviser from among the entire course offering of the social sciences listed in this catalog. This major is intended to meet the individual needs of the student, particularly those interested in pre-law, Latin-American studies, and the Public Service and Foreign Service training programs.

- (9) *Social Welfare*: A major in social welfare shall consist of 45 semester hours in addition to the prerequisite courses, SO 101, PL 110, BI 100, which may be taken in partial fulfillment of the general education requirements in science and the social sciences.

Required courses: PY 367, 421, 492; SO 321; SW 211, 321, 322; AN 111; PS 112; 3-EC 201.

Optional Courses: 15 semester hours to be selected from the following: HI 131, 338, 339; 3-EC 202, 321; 3-GB 233; 3-FI 331; PS 101, 111, 311, 341, 431; BI 340; EN 103; GE 131; AN 411; SW 331; SO 213. For students who plan to do social work in the Southwest, it is recommended that at least 16 hours of Spanish be completed.

### **Fine Arts**

- (1) *Fine Arts*: A major in fine arts shall consist of 45 semester hours. The following emphases are available:

- (a) *Painting*: Required courses in basic art training: AR 111, 114, 122, 141, 142; AH 211, 212, 213.

Required courses in painting and drawing: AR 123, 211, 222, 223, 314, 322, 421, and art electives to complete the 45 hours, selected in consultation with the adviser.

- (b) *Sculpture*: Required courses in basic art training: AR 111, 114, 141, 161; AH 211, 212, 213.  
 Required courses in sculpture and drawing: AR 131, 211, 231, 314, 414, 432, and art electives to complete the 45 hours, selected in consultation with the adviser.  
 A combined emphasis in sculpture and painting is possible, if the student desires.
- (c) *Art History*: Required courses: AR 111, 141, 142; AH 211, 212, 213, 221, and sufficient courses in art and related fields to complete 45 hours, selected in consultation with the adviser.
- (d) *General Art*: Required courses in basic art training: AR 111, 114, 141, 142; AH 211, 212, 213, and art electives to complete the 45 hours, selected in consultation with the adviser.
- (2) *Music*: The major in music consists of a minimum of 45 semester hours of prescribed work in the areas of communication, musicology and applied music.  
 Music majors planning to pursue graduate study in any of the curricula, or who plan to engage in private music teaching, should, in addition to the prescribed minimum hours in the major, choose the appropriate minor sequence of upper division courses. This additional work in a minor related area is essential for entrance into any professional graduate-level school of music.

All freshman and transfer students who intend to major in music must take certain tests to determine their aptitude and proficiency in communications and applied music before being admitted as majors. These tests are given during Freshman Week and during registration at the beginning of each semester.

All music majors are required to meet a minimum standard of proficiency in piano. Up to four semester hours of course work in basic piano may be taken to achieve this proficiency. In addition, students must pass a proficiency examination in their major applied music field before being admitted to the lower division courses in private instruction in these fields. Students taking an applied music sequence must also receive the approval of a faculty jury before enrolling in upper division courses in their performance fields.

Attendance at recitals and concerts is an important part of the educational program, and all music majors are required to attend a minimum of 25 authorized musical events per year as partial fulfillment of the course requirements in musicology and applied music.

The major in music consists of required courses in the following areas:

Communications:

Integrated Theory; Contemporary Music  
 Theory .....14 hours

Applied Music:

Major performing medium (taken during the  
 four semesters of first two years)..... 8 hours  
 Basic piano (if student demonstrates mini-  
 mum proficiency in piano, these four hours  
 may be taken as electives in other applied  
 music) ..... 4 hours  
 Performing organizations ..... 9 hours

Musicology:

Musicology  
 Form and Comparative Analysis.....10 hours

TOTAL.....45 hours

For those who are planning to pursue graduate study or teach  
 privately, the following sequences are suggested:

a. Communications (Theory and Composition):

Counterpoint ..... 4 hours  
 Instrumentation ..... 4 hours  
 Composition ..... 4 hours  
 Electives ..... 3 hours  
 (Suggested courses: Arranging, 20th Century  
 Music, Score Reading, Pedagogy of Theory,  
 Form and Analysis, Recital of Compositions)

TOTAL.....15 hours

b. Musicology (Musical History and Literature):

Introduction to Musicology..... 2 hours  
 Symphonic Literature..... 2 hours  
 Vocal and Choral Literature..... 2 hours  
 Chamber Music Literature..... 2 hours  
 20th Century Music..... 2 hours  
 Electives ..... 5 hours  
 (Suggested courses: Foreign Languages, Score  
 Reading, Form and Analysis, Performing Or-  
 ganizations)

TOTAL.....15 hours

c. Applied Music (Performance techniques):

Major Performing Medium (private lessons  
 plus senior recital) ..... 8 hours  
 20th Century Music ..... 2 hours  
 Electives ..... 5 hours  
 (Suggested courses: extra performing organi-  
 zations and ensembles or:

1. For Keyboard instrumentalists—  
Accompanying, Sight Reading, Keyboard Literature, Counterpoint, Composition, Form and Analysis, Fundamentals of Conducting.
2. For Vocal performers—  
Opera Workshop, Foreign Languages, Counterpoint, Vocal and Choral Literature, Form and Analysis, Fundamentals of Conducting.
3. For Orchestral instrumentalists—  
Chamber Ensembles, Symphonic Literature, Chamber Music Literature, Counterpoint, Composition, Score Reading, Form and Analysis, Fundamentals of Conducting.)

TOTAL.....15 hours

- d. Music Education (Private studio instruction):
- |   |         |
|---|---------|
| Major Performing Medium (private lessons plus senior recital) ..... | 8 hours |
| The Private Music Teacher's Methods and Materials .....             | 1 hour  |
| Practice Teaching (Private).....                                    | 1 hour  |
| 20th Century Music.....   | 2 hours |
| Electives .....   | 3 hours |
- (Suggested courses: extra performing organizations and ensembles or:

1. For Keyboard instrumentalists—  
Accompanying, Sight Reading, Keyboard Literature, Counterpoint, Composition, Form and Analysis, Fundamentals of Conducting.
2. For Vocal performers—  
Opera Workshop, Foreign Languages, Counterpoint, Vocal and Choral Literature, Form and Analysis, Fundamentals of Conducting.
3. For Orchestral instrumentalists—  
Chamber Ensembles, Symphonic Literature, Chamber Music Literature, Counterpoint, Composition, Score Reading, Form and Analysis, Fundamentals of Conducting.)

TOTAL.....15 hours

- e. General Music (It is presumed that the student pursuing this course is interested in securing a well rounded cultural background and will wish to choose a sequence in related fields such as art, literature, drama, and the general humanities. It is possible, however, if the student desires, to select a sequence among the electives available in music, the courses to be selected with the approval of the student's adviser.)  
Electives .....15 hours

**Health, Physical Education and Recreation**

- (1) *Health Education:* A major in health education shall consist of 45 semester hours.  
Required courses: HE 370, 461, 470, 480; MI 201, 202; ZO 102; AN 411; 2-AV 411; PY 367; SE 311; SW 211. The remaining semester hours shall be chosen by the student in consultation with his adviser.
- (2) *Physical Education:* A major in physical education shall consist of 45 semester hours. Of these, 24 hours must be in physical education or a closely related field. Fifteen of the 24 hours must be upper division courses.  
Required courses: PE 161, 371; ZO 102, and 6 semester hours of physical education activity. The remaining 29 semester hours shall be chosen from optional courses by the student in consultation with his adviser.  
Optional: ZO 271, 460; CH 231; PH 101; SO 213; PY 131, 362; MU 100; AR 141, 161, 171; 4-TM 369; PE 150, 151, 250, 251, and 4 semester hours physical education activity. Other related courses may be substituted with the approval of the adviser.
- (3) *Recreation:* A major in recreation shall consist of 47-53 semester hours. At least one half of these hours must be in the field of physical education with 15 hours in upper division courses. This major is designed to present the student with the theories and practices of the field of recreation, and to prepare him with the necessary personal skills.  
Required courses: PY 367; AN 411; ZO 102; PE 160, 220, 386; RE 150, 260, 261, 262, 371, 372 and 4 semester hours of activity courses. The remaining 25-31 hours shall be selected from the optional courses by the student in consultation with his adviser.  
Optional courses: AR 161, 171; 3-EC 201, 311; 3-FI 331; 2-EE 211; 2-KP 221, 322; 2-AV 411, 511; HO 341; 4-IA 121, 133; JO 110; PE 150, 151, 250, 251, 261, 262, 280, 360, 361, 362, 363, 364, 365, 367, 385, 462; RE 470; PY 382, 383; PS 111; SE 211; DR 311, 312, 313; SO 213, 332, 441; SW 211;

AN 412; ZO 100, 441. Other related courses may be substituted with the approval of the adviser.

### Home Economics

- (1) *Clothing, Textiles, and Related Arts*: A major in clothing, textiles, and related art shall consist of 45 semester hours.

Required courses: HO 111, 122, 123 or 124, 131, 141, 142 or 143, 223, 232, 331, 332, 333. An additional 18 hours will be selected by the student with the approval of the adviser from the following:

Clothing and Textiles: HO 221, 222, 231, 421, 422; AR 114, 141, 142, 172, 184, 271, 371.

Costume Design: HO 221, 222, 231, 421, 422; AR 114, 141, 142, 184, 185, 284, 384.

Interior Decorating: HO 222, 231, 424, 451; 4-IA 156, 256; AR 111, 142, 143, 344; 4-AC 100, 150, 431, 456.

- (2) *Family Life and Child Development*: A major in family life and child development shall consist of 45 semester hours.

Required courses: HO 111, 122, 123 or 124, 131, 141, 142, 223, 232, 331, 332, 333. An additional 18 hours to be chosen with the approval of the adviser, from the following: HO 131, 231, 233, 241, 431, 432; 3-EC 201; 2-EE 211; 2-KP 221, 322; PY 362, 367, 383; SO 213, 321, 332; ZO 102.

- (3) *Foods and Nutrition*: A major in foods and nutrition shall consist of 45 semester hours.

Required courses: HO 111, 122, 123 or 124, 131, 141, 142, 223, 232, 331, 332, 333. An additional 18 hours to be chosen with the approval of the adviser from the following: HO 231, 233, 241, 341, 342, 343, 441, 442, 443; MI 201, 202; CH 231, 464, 465; PH 101; ZO 102.

### Language and Literature

- (1) *Dramatics*: A major in dramatics shall consist of 47 semester hours.

Required courses: DR 111, 112, 313; SE 211, 230, 241, 424; EN 211, 221, 222, and 6 hours of upper division literature. The hours needed to complete the 47 semester hours for the major may be selected from other offerings in speech and dramatics or, with the consent of the adviser, from related fields.

- (2) *English*: A major in English shall consist of 47 semester hours.

Required courses: EN 211, 221, 222; HI 251, 252; Foreign Languages, 8 hours in addition to the general education requirements. One course is required in each of the following groups: Group I: EN 312, 413; Group II: EN 341,

342, 425, 426, 427; Group III: EN 321, 343, 351, 352, 441, 451, 452, 453, 454; Group IV: EN 421, 422, 423, 424; Group V: SE 211, 230, 241, 312, 424. The hours needed to complete the 47 hours required for the major may be chosen from the complete departmental offering. With the consent of the adviser, an additional 3 hours in related fields may be substituted for English courses.

- (3) *French:* A major in French shall consist of 45 semester hours in addition to the prerequisite courses, FR 101 and 102, which may be taken in fulfillment of the general education requirements in Foreign Language.

Required courses: FR 201, 202, 311, 312, 321, 322, and 3 hours of other upper division courses. An additional sequence of courses sufficient to complete the 45 semester hours in the major, to be selected with the approval of the adviser, from among the following: EN 201, 221, 222; GR 201, 202; SP 201, 202; HI 322, 324, 421, 422; LA 101, 102; RU 101, 102; and other courses in French listed in the catalog.

A minor (optional) of 15 semester hours in a related field, selected with the approval of the student's adviser.

- (4) *German:* A major in German shall consist of 45 semester hours in addition to the prerequisite courses, GR 101 and 102, which may be taken in fulfillment of the general education requirements in Foreign Language.

Required courses: GR 201, 202, 311, 312, 321, 322, and 3 hours of other upper division courses. An additional sequence of courses sufficient to complete the 45 semester hours in the major, to be selected with the approval of the adviser, from among the following: EN 201, 221, 222; FR 201, 202; SP 201, 202; HI 321, 322, 324, 422; LA 101, 102; RU 101, 102; and other courses in German listed in the catalog.

A minor (optional) of 15 semester hours in a related field, selected with the approval of the student's adviser.

- (5) *Journalism:* A major in journalism shall consist of 47 semester hours.

Required courses: JO 110, 211, 212, 313, 320, 411, 421; EN 211, 221, 222, and 6 hours of upper division literature; 3-EC 202; PS 101. The hours needed to complete the 47 semester hours for the major may be selected from other offerings in journalism or, with the consent of the adviser, from related fields.

- (6) *Radio-Television:* A major in radio-television shall consist of 47 semester hours.

Required courses: JO 110, 211, 312, 314, 315; EN 211; SE 221, 230, 332, 333, 334, 431; 3-AD 275, 472. The hours needed to complete the major will be selected by the student

in consultation with the adviser from among courses in the Department of English and other departments.

- (7) *Spanish*: A major in Spanish shall consist of 45 semester hours in addition to the prerequisite courses, SP 101 and 102, which may be taken in fulfillment of the general education requirements in Foreign Language.

Required courses: SP 201, 202, 313, 314, 321, 322, 427 or 451. An additional sequence of courses sufficient to complete the 45 semester hours in the major, to be selected with the approval of the adviser, from among the following: EN 201, 221, 222; FR 201, 202; GR 201, 202; HI 241, 242, 341, 421, 441 (summer only); LA 101, 102; RU 101, 102; and other courses in Spanish listed in the catalog.

A minor (optional) of 15 semester hours in a related field, selected with the approval of the student's adviser.

- (8) *Speech*: A major in speech shall consist of 47 semester hours.

Required courses: SE 120, 211, 213, 230, 241, 313, 421, 424, and 8 hours of upper division speech electives; EN 221, 222, and 6 hours of upper division literature. The hours needed to complete the 47 semester hours for the major may be selected from other offerings in speech or, with the consent of the adviser, from related fields.

### Life Sciences

All majors in the Division of Life Sciences who have made less than a "B" grade in high school biology must take BI 100. Courses required of all majors in the Life Sciences, regardless of department, are BI 340, 410; BO 100; ZO 100; (13 hours), and sometime during the last three years at least one hour of research credit must be earned. At least 18 semester hours must be at the "300" or higher level.

- (1) *Botany*: A major in botany shall consist of at least 15 hours in the Department of Botany. An additional 27 hours must be selected from the Division of Life Sciences including the 14 hours of divisional requirements plus MI 201, 202. The remaining 9 hours shall be selected with the approval of the adviser. Supporting courses required are CH 111 and PH 101.

A minor field may be selected with the approval of the major adviser. The following are suggested areas: agronomy, art, chemistry, entomology, geography, geology, horticulture, microbiology, and zoology.

- (2) *Entomology*: A major in entomology shall consist of a minimum of 15 hours credit in the field of entomology. An additional 23 hours must be selected from the Division of Life Sciences including the 14 hours of divisional requirements plus ZO 441. Supporting courses required are: CH 111, 231, and PH 101.



A minor field may be selected with the approval of the major adviser. Suggested areas are: agriculture, art, botany, chemistry, Spanish, zoology.

- (3) *General Biology*: A major in general biology shall consist of 42 hours in the Division of Life Sciences, including the 14 hours of divisional requirements plus MI 201, 202 and ZO 150. Of the remaining 21 hours at least 13 must be in "300" or higher courses and selected with the assistance of the adviser. Supporting courses required are CH 111 and PH 101.

A minor field may be selected with the approval of the major adviser. The following are suggested areas: agriculture, art, botany, chemistry, English, entomology, geology, physics, psychology, social studies, zoology.

- (4) *Zoology*: A major in zoology shall consist of 20 hours in the Department of Zoology plus the 14 hours of divisional requirements and 8 hours of elective courses selected with the approval of the adviser. Supporting courses required are: CH 111 and PH 101.

A minor field may be selected with the approval of the major adviser. The following are suggested areas: animal husbandry, art, botany, chemistry, entomology and physics.

### Physical Sciences

- (1) *Chemistry*: A major in chemistry shall consist of a minimum of 45 semester hours.

Required courses: MA 116 or 117, 118; PH 111, 112; CH 113, 115, 225, 331, 332, 341, and 6 additional hours selected with the approval of the adviser. (CH 231 and an additional course in chemistry may be substituted for CH 331, 332). It is recommended that 8 hours of the courses used to satisfy the general education requirements in science and mathematics be selected from ZO 100, BO 100, GL 113.

This major is intended for those who plan a lesser degree of specialization than is required for the Bachelor of Science degree. Students who desire chemistry as a major in the study of pre-medicine, pre-dentistry, pre-osteopathy, or technical sales, etc. may elect this program.

- (2) *Geography*: A major in geography shall consist of 45 semester hours.

Required courses: GE 111, 131, 142, 221, 222, 321; GL 113, and 25 additional hours in geography and related subjects to be selected with the approval of the adviser.

- (3) *Geology*: A major in geology shall consist of 45 semester hours.

Required courses: GL 113, 114, 321, 322; GE 142, and 29 additional hours in geology and related subjects to be selected with the approval of the adviser.

- (4) *Mathematics*: A major in mathematics shall consist of 45 semester hours. MA 105, 305 do not count towards a mathematics major.

Transfer students majoring in mathematics must take at least two upper division mathematics courses at this college.

Required courses: MA 119 (or MA 116, 117, 118), 120, 121, 212, 221 and 321 (or MA 220, 362), 441, 442, and three or more upper division courses selected by the student with the approval of his adviser. In addition, it is strongly recommended that the student acquire a reading knowledge of both French and German.

- (5) *Physics*: A major in physics shall consist of a minimum of 45 semester hours.

Required courses: CH 113, 115; PH 111, 112, or equivalent; MA 120, 121, 212, and 16 additional hours in physics courses, or equivalent, chosen from the listings of this bulletin with the advice and consent of the adviser. It is recommended that one course from Group II, Biological Sciences, be selected to satisfy the general education requirements in the sciences, in addition to CH 115 and PH 112, which may also be so used.

### **Inter-Divisional**

*General Studies*: A major in general studies shall consist of 45 semester hours. This major is intended for those students whose vocational objectives are not met by a regular departmental major, or who desire a broad general education for personal and cultural development.

Required courses: 15 semester hours in one of the following fields: art, biological science, English, foreign language, mathematics, music, physical science, psychology, social studies.

Optional courses: 30 semester hours selected from two or more fields, not more than 20 semester hours in one field, to constitute a pattern of related courses in line with the student's needs. These courses may be selected from the entire offering of the College, in consultation with the student's adviser.

## Bachelor of Science Degree Curriculum

The curriculum for the degree of Bachelor of Science is designed to give the student a broad general background in the principal fields of human knowledge and an opportunity to specialize in one specific selected area of scientific endeavor. It is divided into three parts:

### General Education

1. *Communications* ..... 8 sem. hours
  - EN 101, 102..... 6 sem. hours
  - SE 120 or 200..... 2 sem. hours

2. *Humanities* ..... 8 sem. hours

#### Option I

Eight semester hours to be selected from the following, not more than one course in a subject: 4-AC 100; AH 102, 211, 212; EN 103, 201, 202, 341, 342; FL 100; MU 105, 107; PI 101, 228 ..... 8 sem. hours

#### Option II

HU 201, 202 ..... 6 sem. hours  
 One course to be selected from the following:  
 AH 211, 212; EN 201, 202, 341, 342; FL 100; MU 105;  
 PI 228 .....2-3 sem. hours

3. *Social Sciences* ..... 9 sem. hours

#### Option I

HI 101, 102 or HI 103, 104... 6 sem. hours  
 One course to be selected from the following:  
 AN 111; 3-GB 101; 3-EC 201;  
 PS 101; SO 101 ..... 3 sem. hours

#### Option II

SS 101, 102 ..... 6 sem. hours  
 One course to be selected from the following:  
 HI 101, 102, 103, 104 ..... 3 sem. hours

4. *Sciences* .....14 sem. hours

At least one course to be selected from each of the following groups:  
 Group 1.—Physical Sciences—  
 PL 110, 410; CH 111, 115;

GE 111; GL 113; PH 101, 112,  
121.

Group 2.—Life Sciences—  
BI 100; BO 100; ZO 100.

Group 3.—Mathematics—  
MA 105, 116, 117, 118, 119.

5. <i>Health and Adjustment</i> .....	7 sem. hours
Physical Education Activity....	2 sem. hours
HE 100 .....	2 sem. hours
PY 100 .....	3 sem. hours

Since the introductory courses designed to meet the general education requirements are necessarily elementary, the student is expected to take most of them in his first two years. He will then be able to devote most of his last two years to advanced work in the field of his special interest.

A student is exempt from general education courses in his major field. Students of nursing are exempt from general education courses in the sciences and from HE 100, Hygiene. Majors in biological science are exempt from HE 100, Hygiene. Men in ROTC and students taking two or more semesters of marching band are required to have but one semester hour of physical education activity.

### Major Requirements

A major shall consist of from 45 to 55 semester hours of credit. The majors in the following list marked with an asterisk (\*) require a four-year sequence of courses. A student who elects them after the first semester of his college career must therefore expect to spend more than four years in attaining the bachelor's degree. Majors not marked with an asterisk can be completed in three years or less, and may therefore be elected at the beginning of the sophomore year with no loss of time.

Division	Major
Behavioral and Social Sciences	Anthropology
	Economics
	History
	Political Science
	Psychology
	Sociology
	Social Sciences
	Social Welfare
Fine Arts	Applied arts, with emphasis in
	Ceramics
	Commercial Art
	Crafts
	Fashion Design
	Fashion Illustration
	Interior Design

Health, Physical Education and Recreation	Health Education Physical Education Recreation
Home Economics	Clothing, Textiles, and Related Arts Family Life and Child Development Foods and Nutrition General Home Economics
Life Sciences	*Botany *Entomology *General Biology *Microbiology *Physiological Zoology *Zoology
Physical Sciences	*Chemistry Geography Geology Mathematics Physical Sciences Physics
Inter-Divisional	General Studies

**Elective Courses**

Sufficient elective courses from the entire offering of the College will be chosen by the student in order to complete the 126 semester hours required for graduation. A student may group 15 or more of his elective hours to form a minor if he desires.

**Four-year Curriculum Outline**

The following is a suggested outline to indicate to the student one way in which the general education, major, and elective requirements may be worked into a four-year pattern of study. Except in unusual cases, all general education requirements should be completed during the first two years of study.

FIRST YEAR			
First Semester	Hours	Second Semester	Hours
EN 101 First Year English.....	3	EN 102 First Year English.....	3
AS 101 Basic Air Science or MS 101 Basic Military Science..	1.5	AS 102 Basic Air Science or MS 102 Basic Military Science..	1.5
Science or Mathematics.....	4	PE 101 Freshman Phys. Education	.5
Humanities or Social Science Elective .....	2 to 4	Science or Mathematics.....	4
*HE 100 Hygiene .....	2	Humanities or Social Science Elective .....	2 to 4
Major .....	3 to 4	Major .....	3 to 4
PE 101 Freshman Phys. Ed.....	.5		
	14½ to 17½		15½ to 17

SECOND YEAR			
First Semester	Hours	Second Semester	Hours
AS 201 Basic Air Science or MS 201 Basic Military Science	1.5	AS 202 Basic Air Science or MS 202 Basic Military Science	1.5
*PY 100 Elementary Psychology	3	*SE 120 or 200	2
Physical Activity	.5	Physical Activity	.5
*HE 100 Hygiene	2	Major	3 to 6
Major	3 to 4	Social Science or Humanities	
Social Science or Humanities		Elective	3
Elective	3	Other Electives to complete	15 to 17 hrs.
Science or Math. Elective	3 to 4		
Other Electives to complete	15 to 17 hrs.		
THIRD YEAR			
First Semester	Hours	Second Semester	Hours
Social Science or Humanities		Social Science or Humanities	
Elective	3	Elective	3
Major	3 to 9	Major	3 to 9
Other Electives to complete	15 to 17 hrs.	Other Electives to complete	15 to 17 hrs.
FOURTH YEAR			
First Semester	Hours	Second Semester	Hours
Major	3 to 9	Major	3 to 9
Other Electives to complete	15 to 17 hrs.	Other Electives to complete	15 to 17 hrs.

## Divisional Major Requirements

### Behavioral and Social Sciences

- (1) *Anthropology*: A major in anthropology shall consist of 45 semester hours.  
 Required courses: AN 111, 221, 341, 411, 421.  
 Optional courses: 18 hours selected from the following:  
 AN 231, 312, 321, 331, 332, 412; SO 213, 321, 331, 332, 441; PY 362, 367, 421; GL 113, 114; GE 111, 322, 323; BI 340; ZO 100, 271; HI 338, 341, 471, 472. An additional 13 hours must be completed in courses related to the subject of anthropology selected by the student in consultation with his adviser.
- (2) *Economics*: A major in economics shall consist of 45 semester hours.  
 Required courses: 3-EC 201, 202, 311, 401.  
 Optional courses: 18 hours, selected with the approval of the adviser, from the following: 3-MK 251; 3-FI 301, 331, 441; 3-EC 321, 331, 351, 412, 441, 453, 470; 3-GB 321, 341.  
 An additional 15 hours must be completed in courses related to the subject of economics selected by the student in consultation with his adviser.
- (3) *History*: A major in history shall consist of 45 semester hours.  
 Required courses: HI 101, 102, 103, 104, 311. An additional 6 hours of upper division courses chosen from courses in history listed in the college catalog. An additional 15 hours must be completed in courses related to the subject of history, selected by the student in consultation with his adviser.

- (4) *Political Science*: A major in political science shall consist of 45 semester hours.  
 Required courses: PS 111, 112, 113, 221, 231. In addition 15 hours of upper division courses must be chosen from courses in political science listed in the college catalog. Fifteen hours must be completed in courses related to the subject of political science, selected by the student in consultation with his adviser.
- (5) *Psychology*: A major in psychology shall consist of 45 semester hours in addition to the prerequisite courses SO 101, PY 100, and BI 100, which may be taken in partial fulfillment of the general education requirements in the social and physical sciences.  
 Required courses: PY 341, 343, 367, 492. An additional 18 hours of psychology selected from the course offerings listed in the catalog.  
 Optional courses: 15 hours, selected with the approval of the adviser, from the following: ZO 102; BI 340; 3-EC 321; 3-MG 311; SE 211, 421; EN 313; MA 121; PI 211, 212, 221, 228, 231; SO 213, 332, 441.
- (6) *Sociology*: A major in sociology shall consist of 45 semester hours.  
 Required courses: SO 101, 213; SW 211; AN 111; PY 367. An additional 15 hours of upper division courses must be completed, chosen from courses in sociology listed in the catalog. AN 411, 412 and PY 492 may be included by the student in the above group. An additional 15 hours must be completed in courses related to the subject of sociology selected by the student in consultation with his adviser.
- (7) *Social Sciences*: A major in social sciences shall consist of 45 semester hours selected by the student in consultation with his adviser from among the entire course offering of the social sciences as listed in this catalog. This major is intended to meet the individual needs of the student, particularly those interested in pre-law, Latin-American studies, and the Public Service and Foreign Service training programs.
- (8) *Social Welfare*: A major in social welfare shall consist of 45 semester hours in addition to the prerequisite courses SO 101; PL 110; and BI 100, which may be taken in partial fulfillment of the general education requirements in science and the social sciences.  
 Required courses: PY 367, 421, 492; SO 321; SW 211, 321, 322; AN 111; PS 112; 3-EC 201.  
 Optional courses: 15 semester hours to be selected from the following: HI 131, 338, 339; 3-EC 202, 321; 3-GB 233; 3-FI 331; PS 101, 111, 311, 341, 431; BI 340; EN 103; GE 131; AN 411; SW 331; SO 213. For students who plan to do so-

cial work in the Southwest, it is recommended that at least 16 hours of Spanish be completed.

### **Fine Arts**

- (1) *Applied Arts:* A major in applied arts shall consist of 50 semester hours. The following emphases are available:
  - (a) *Commercial Art:* Required courses in basic art training: AR 111, 114, 122, 141, 142, 181.  
Required courses in commercial art: AR 182, 281, 382, 482, and art electives to complete 50 hours.
  - (b) *Interior Design:* Required courses in basic art training: AR 111, 114, 122, 141, 142, 181; AH 213.  
Required courses in interior design: AR 143, 211, 241, 344, 443, and art electives to complete 50 hours.
  - (c) *Fashion Design:* Required courses in basic art training: AR 111, 114, 122, 141, 142, 181.  
Required courses in fashion design: HO 123, 222; AR 182, 184, 185, 284, 384; AH 115, and art electives to complete 50 hours.
  - (d) *Fashion Illustration:* Required courses in basic art training: AR 111, 114, 122, 141, 142, 181.  
Required courses in fashion illustration: AR 182, 184, 185, 211, 222, 285, 314; AH 115, and art electives to complete 50 hours.  
A combined emphasis in fashion design and fashion illustration is possible, if the student desires.
  - (e) *Ceramics:* Required courses in basic art training: AR 111, 142, 181; AH 211, 213.  
Required courses in ceramics: AR 161, 211, 241, 361, 461, and art electives to complete 50 hours.
  - (f) *Crafts:* Required courses in basic art training: AR 111, 122, 141, 142, 181; AH 211, 213.  
Required courses in crafts: AR 161, 171, 211, 241, 271, 371, 372, and art electives to complete 50 hours.  
A combined emphasis in ceramics and crafts is possible, if the student desires.

### **Health, Physical Education and Recreation**

- (1) *Health Education:* A major in health education shall consist of 45 semester hours.  
Required courses: HE 370, 461, 470, 480; MI 201, 202; ZO 102; AN 411; 2-AV 411; PY 367; SE 311; SW 211. The remaining semester hours shall be chosen by the student in consultation with his adviser.
- (2) *Physical Education:* A major in physical education shall consist of 45 semester hours. Of these 24 hours must be



in physical education or closely related fields. Fifteen of the 24 hours must be upper division courses.

Required courses: PE 161, 371; ZO 102, and 6 hours of physical education activity. The remaining 29 semester hours shall be chosen by the student in consultation with his adviser from the following group: ZO 271, 460; CH 231; PH 101; SO 213; PY 131, 362; MU 100; AR 141, 161, 171; 4-TM 369; PE 150, 151, 250, 251, and 4 semester hours of physical education activity. Other related courses may be substituted with the approval of the adviser.

- (3) *Recreation*: A major in recreation shall consist of 47-53 semester hours. At least one-half of these hours must be in the field of physical education with 15 hours in upper division courses. This major is designed to present the student with the theories and practices of the field of recreation, and to prepare him with the necessary personal skills.

Required courses: PY 367; AN 411; ZO 102; RE 150, 260, 261, 262, 371, 372; PE 160, 386, and 4 hours of activity courses. The remaining 25-31 hours shall be selected from the optional courses by the student in consultation with his adviser.

Optional courses: AR 161, 171; 3-EC 201, 311; 3-FI 331; 2-EE 211; 2-KP 211, 322; 2-AV 411, 511; HO 341; 4-IA 121, 133; JO 110; PE 150, 151, 250, 251, 261, 262, 280, 360, 361, 362, 363, 364, 365, 367, 385, 462; RE 470; PY 382, 383; PS 111; SE 211; DR 311, 312, 313; SO 213, 332, 441; SW 211; AN 412; ZO 100, 441. Other related courses may be substituted with the approval of adviser.

### Home Economics

- (1) *Clothing, Textiles, and Related Art*: A major in clothing, textiles, and related art shall consist of 45 semester hours. Required courses: HO 111, 122, 123 or 124, 131, 141, 142 or 143, 223, 232, 331, 332, 333. An additional 18 hours will be selected by the student with the approval of her adviser from the following:

Clothing and Textiles: HO 221, 222, 231, 421, 422; AR 114, 141, 142, 172, 184, 271, 371.

Costume Design: HO 221, 222, 231, 421, 422; AR 114, 141, 142, 184, 185, 284, 384.

Interior Decorating: HO 222, 231, 424, 451; AR 111, 142, 143, 344; 4-IA 156, 256; 4-AC 100, 150, 431, 456.

- (2) *Family Life and Child Development*: A major in family life and child development shall consist of 45 semester hours.

Required courses: HO 111, 122, 123 or 124, 131, 141, 142, 223, 232, 331, 332, 333. An additional 18 hours to be chosen

with the approval of the adviser from the following: HO 131, 231, 233, 241, 431, 432; 3-EC 201; 2-EE 211; 2-KP 221, 322; PY 362, 367, 383; SO 213, 321, 332; ZO 102.

- (3) *Foods and Nutrition*: A major in foods and nutrition shall consist of 45 semester hours.

Required courses: HO 111, 122, 123 or 124, 131, 141, 142, 223, 232, 331, 332, 333. An additional 18 hours to be chosen with the approval of the adviser from the following: HO 231, 233, 241, 341, 342, 343, 441, 442, 443; MI 201, 202; CH 231, 464, 465; PH 101; ZO 102.

- (4) *General Home Economics*: A major in general home economics shall consist of 45 semester hours.

Required courses: HO 111, 122, 124, 131, 141, 142, 223, 232, 331, 332, 333. An additional 18 hours to be chosen with the approval of the adviser from the following: HO 131, 221, 222, 231, 233, 241, 341, 342, 343, 421, 422, 424, 431, 432, 441, 442, 443, 451.

### Life Sciences

All majors in the Division of Life Sciences who have made less than a "B" grade in high school biology must take BI 100. Courses required of all majors in the Life Sciences, regardless of department, are BI 340, 410; BO 100; ZO 100; (13 hours) and sometime during the last three years at least one hour of research credit must be earned. At least 18 semester hours must be at the "300" or higher level.

- (1) *Botany*: A major in botany shall consist of at least 20 hours in the Department of Botany. An additional 27 hours must be selected from the Division of Life Sciences, including the 14 hours of divisional requirements plus MI 201, 202. The remaining 9 hours shall be selected with the approval of the adviser. Supporting courses required are CH 111 and PH 101.

A minor field may be selected with the approval of the major adviser. The following are suggested areas: agronomy, art, chemistry, entomology, geography, geology, horticulture, microbiology, and zoology.

- (2) *Entomology*: A major in entomology shall consist of a minimum of 20 hours credit in the Department of Entomology. An additional 18 hours must be selected from the Division of Life Sciences, including the 14 hours of divisional requirements plus ZO 441. Supporting courses required are CH 113, 115, 231; PH 101.

A minor field may be selected with the approval of the major adviser. Suggested areas are: agriculture, art, botany, chemistry, Spanish, zoology.

- (3) *General Biology*: A major in general biology shall consist of 45 hours in the Division of Life Sciences, including

the 14 hours of divisional requirements plus MI 201, 202; ZO 150; BO 450 or ZO 396. Of the remaining 17 (or 18) hours, at least 10 (or 11) must be of "300" or higher courses and selected with the assistance of the major adviser. Supporting courses required are CH 113, 115, and PH 101. Organic chemistry is strongly recommended.

A minor field may be selected with the approval of major adviser. The following are suggested areas: agriculture, art, botany, chemistry, English, entomology, geology, physics, psychology, social studies, zoology.

- (4) *Microbiology*: A major in microbiology shall consist of 38 hours in the Division of Life Sciences, including the 14 hours of divisional requirements plus BO 280; MI 201, 202, 410, 445; ZO 360, 396, 470. Supporting required courses are CH 113, 115, 225, 231, and PH 111, 112. The 8 hours of physics can be applied on the general education science requirement.

A minor field may be selected with the approval of the adviser. The following are suggested areas: agriculture, botany, entomology, mathematics, physics, zoology.

- (5) *Physiological-Zoology*: A major in physiological-zoology shall consist of 47 semester hours in the Division of Life Sciences, including the 14 hours of divisional requirements plus MI 201, 202, 445; ET 200; ZO 150, 271, 360, 396, 441, 470, 472. Supporting courses required are MA 116 or 117 and PH 111, 112. The mathematics may be applied toward a partial fulfillment of general education requirements in science and mathematics.

Required minor: Students taking this major are required to take a minor in chemistry consisting of CH 113, 115, 331, 332. Those students who desire may increase their minor by also taking CH 225 and 341.

Alternate minor: Students interested in medical translation or illustration should minor in languages or art instead of chemistry. CH 111, 231, and PH 101 may be substituted for equivalent minor requirements listed above. Acceptable programs in these fields should be selected with the approval of the major adviser.

This major is especially designed for those who are interested in pre-medicine, pre-osteopathy, or pre-dentistry, and at the same time wish a background that will give them a basic training for physiological research.

- (6) *Zoology*: A major in zoology shall consist of 47 hours in the Division of Life Sciences, including the 14 hours divisional requirements plus ZO 150, 271, 360, 396, 424, 441, 470, and 472. An additional 8 hours may be selected with the approval of the adviser. Supporting courses required are CH 111 and PH 101.

A minor field may be selected with the approval of the major adviser. The following are suggested areas: animal husbandry, art, botany, chemistry, entomology, and physics.

### Physical Sciences

- (1) *Chemistry*: A major in chemistry shall consist of a minimum of 51 semester hours.  
 Required courses: PH 111 and 112 or 211 and 212; CH 113, 115, 225, 226, 331, 332, 431, 441, 442. Additional courses to complete 51 hours to be selected from CH 300, 351, 421, 447, 464, 465, 471.  
 The student is also required to complete a minor in mathematics consisting of MA 119 or 117 and 118, 120, 121, 212. A reading knowledge of German, French, or Russian is required for recommendation to graduate school. This requirement may be satisfied by taking one year of one of these foreign languages.  
 This major is offered for students preparing for professional work in industrial or research laboratories, or for graduate study.
- (2) *Geography*: A major in geography shall consist of a minimum of 45 semester hours.  
 Required courses: GE 111, 131, 142, 221, 222, 223, 321, 422; GL 113, 114. Additional courses to complete 45 hours, to be selected with the approval of the adviser.
- (3) *Geology*: A major in geology shall consist of 48 semester hours.  
 Required courses: CH 113, 115; MA 116 or 117, 118; PH 111, 112. Courses from the preceding groups will be used to satisfy science and mathematics general education requirements; 4-IA 103; 4-CE 141; GE 142, 222; GL 113, 114, 246, 321, 322, 461; and the additional hours in geology to be selected with the approval of the adviser.
- (4) *Mathematics*: A major in mathematics shall consist of 45 semester hours. MA 105, 305 do not count towards a mathematics major.  
 Transfer students majoring in mathematics must take at least two upper division mathematics courses at this college.  
 Required courses: MA 119 (or MA 116, 117, 118), 120, 121, 212, 221 and 321 (or 220, 362), 441, 442, and three or more upper division courses selected by the student with the approval of his adviser. In addition, it is strongly recommended that the student acquire a reading knowledge of both French and German.
- (5) *Physical Sciences*: A major in the physical sciences shall consist of 45 semester hours selected from the course of-

fering of the department. A student must complete a minimum of 24 hours in one field of the physical sciences and not less than 15 hours in related subjects in consultation with the adviser. This major may be chosen by students preparing for careers in medicine, dentistry, and for those interested in Civil Service and national defense positions.

- (6) *Physics*: A major in physics shall consist of a minimum of 48 semester hours.

Required courses: MA 120, 121, 212, 221, 321 or equivalent; PH 111, 112 or PH 211, 212; 3 hours of PH 490; and 21 additional hours in upper division physics courses or equivalent selected from the listings of this bulletin with the advice and consent of the adviser. It is suggested that the student also select related courses in chemistry, engineering, mathematics, and geology. In addition to any of the above courses which may also be used to satisfy the general education requirements in sciences, two courses should be selected from those listed in Group II, Biological Sciences.

#### **Inter-Divisional**

*General Studies*: A major in general studies shall consist of 45 semester hours. This major is intended for those students whose vocational objectives are not met by a regular departmental major, or who desire a broad general education for personal and cultural development.

Required courses: 15 semester hours in one of the following fields: art, biological science, English, foreign language, mathematics, music, physical science, psychology, social sciences.

Optional courses: 30 semester hours selected from two or more fields, not more than 20 semester hours in one field, to constitute a pattern of related courses in line with the student's needs. These courses may be selected from the entire offering of the College, in consultation with the student's adviser.

## **Special Programs**

### **Pre-Optometry**

The general requirements for entrance to most schools of optometry include a total of sixty (60) hours, grouped as follows: English Composition, 6 hours; Chemistry, 8-9 hours; Biological Sciences, 8 hours; Psychology, 3-6 hours; the remaining hours being chosen from Social Studies and Humanities. It is strongly urged that a prospective optometry student obtain a catalog from the school he plans to enter, and that he follow their specific courses. The following courses taught at Arizona State College at Tempe will meet the entrance requirements of most schools of optometry:



Many of the above courses will serve to satisfy the student's requirements under the general education requirements of the Bachelor of Arts degree.

### Pre-Law

The requirements for admission to law schools vary from a minimum of three years of pre-legal college work to a four-year program leading to a bachelor's degree. The pre-law student should obtain a copy of the catalog of the law school that he plans to attend and plan his course of study under the guidance of his adviser.

The Association of American Law Schools has indicated that pre-law education should provide the student with: (a) ability in the comprehension and expression of words; (b) the critical understanding of human institutions and values with which the law deals; (c) creative power in thinking. The Association does not recommend any particular courses or sequence of courses for pre-legal training.

The leading law schools prefer that their students shall have completed four years of college work before entrance. Students planning to enter a law school requiring a bachelor's degree for entrance may register within any of the major fields in the Arts and Sciences curriculums, or in the Business Administration curriculum, paying due regard to the recommendations in the preceding paragraph. The student should check carefully in the catalog of the law school which he hopes to attend in order to determine the entrance requirements of that school.

A few law schools admit students upon completion of three years of college work. Under the guidance of the pre-law adviser, work may be taken without reference to the requirements of a degree, and the only degree obtained will be that in law at the end of three additional years at law school.

But students who have completed 98 semester hours (six semesters) at Arizona State College at Tempe with a scholarship index of 2.0 or above in all hours attempted, and have satisfied the general education and major requirements of the College of Liberal Arts for the degree of Bachelor of Arts or Bachelor of Science, may obtain the degree after completing a full year's work in an accredited school of law with an average grade of "C" or above, providing, before entering the school of law, the student secures a statement in writing from the Dean of the College of Liberal Arts giving senior-in-absentia privileges. In order to receive the degree in this manner, the student must, at the end of his first year in law school, have completed a total of 126 semester hours of college credit and present a signed testimonial from the Dean of the Law School to the Registrar at Arizona State College, which shall include a statement of courses taken, grades achieved, and a recommendation that the degree be granted.

Students planning a pre-law program which provides for a bachelor's degree should select a major field of concentration not later than the beginning of his sophomore year. The pre-law adviser will refer him to the adviser in the specific field chosen to see that he meets the requirements for the bachelor's degree at Arizona State College.

### Pre-Dental, Pre-Medical, and Pre-Osteopathy

While schools of medicine, osteopathy, and dentistry indicate in their catalog that students may occasionally be admitted with only two or three years of pre-medical training, the competition for admittance is so great that few students can hope for admission unless they have completed the work for their bachelor's degree with a scholarship index of at least 3.0.

The requirements for entrance into schools of medicine, dentistry, and osteopathy are very similar. The following analysis of admission requirements to medical schools, prepared by the Association of American Medical Colleges, is *apropos*. "Medical schools differ in the specific subjects they require of their applicants. All medical schools require some college work in chemistry, biology, and with one exception, physics. More work is specified in chemistry than any other single subject. Courses in both general and, with one exception, organic chemistry are required by all of the medical schools; quantitative analysis is specified by roughly half, and qualitative analysis and physical chemistry are specified by less than a quarter of the schools. Half of the medical schools require that the total number of semester hours spent in these chemistry courses be 16 or more, while the comparable figure for both biology and physics is 8 semester hours. Required courses in biology, other than general biology and zoology, include comparative anatomy and embryology, specified by approximately a quarter of the schools; and anatomy, genetics, micro-technique, etc., listed by only one or two schools. Nineteen of the medical schools require one or more courses in mathematics. English is a general requirement of almost all of the schools, and about half of them specify some knowledge of a foreign language. Only 18 of the medical schools require any work in the social sciences, although most of the medical schools believe such work helps to round out the liberal arts background of applicants. The total semester hours of required courses in all fields varies from 27 specified by Cornell to 84 hours for Alabama."

Approximately seventy-five percent of the professional schools of the United States require less than forty semester hours in science and mathematics. While additional work in these fields may be taken, the professional schools generally suggest that the prospective student secure a broad, general education, postponing his professional training until he enrolls in a professional school. They generally recommend study in English, the social sciences, psychology, and other subjects of interest to the student.



At the present time, many more students qualify for entrance into the professional schools than can be admitted. It is advised that those who plan medical careers select their major and electives in such a way as to prepare for a possible alternate career in the event that they are not able to secure immediate admission to the school of their choice. Students may major in almost any field in the Arts and Sciences curriculums, but majors in chemistry, biology, psychology, medical technology, and physiological zoology are most common.

The student should consult the pre-medical adviser and discuss with him the program of studies necessary to qualify for admission to the professional schools in which the student may desire to register. If the student indicates a desire to major in a specific field, the pre-medical adviser will refer him to the adviser in the field indicated. It is wise, however, for the student to keep in touch with the pre-medical adviser, regardless of his major field of study, in order to keep abreast of any changes in admission requirements in the professional schools in which he is interested.

A few medical schools admit students upon completion of three years of college work. Under the guidance of the pre-medical adviser, work may be taken without reference to the requirements of a degree, and the only degree obtained will be that in medicine at the end of three additional years at medical school.

But students who have completed 98 semester hours (six semesters) at Arizona State College at Tempe with a scholarship index of 2.0 or above in all hours attempted, and have satisfied the general education and major requirements of the College of Liberal Arts for the degree of Bachelor of Arts or Bachelor of Science, may obtain the degree after completing a full year's work in an accredited school of medicine with an average grade of "C" or above, providing, before entering the school of medicine, the student secures a statement in writing from the Dean of the College of Liberal Arts giving senior-in-absentia privileges. In order to receive the degree in this manner, the student must, at the end of his first year in medical school, have completed a total of 126 semester hours of college credit and present a signed testimonial from the Dean of the Medical School to the Registrar at Arizona State College, which shall include a statement of courses taken, grades achieved, and a recommendation that the degree be granted.

### Pre-Social Work

Most graduate schools of social work require a bachelor's degree with a well rounded background in the social sciences and humanities.

The program for social welfare majors has been developed with a 3-fold purpose: (1) to prepare students who wish to go on to graduate schools of social work, (2) to qualify students for a

limited number of social work positions open to persons without a graduate training, and (3) to give future citizens a general understanding of the field of social welfare.

Because of the 3-fold purpose of the social welfare program and because of the individual differences in entrance requirements of the various graduate schools of social work, students who plan to go on for graduate training are urged to discuss their plans with their adviser and make certain that they will meet the requirements of the specific school they wish to attend.

In general it is recommended that students planning to go on to graduate schools of social work take the following courses in addition to the required courses for social welfare majors:

- AN 411—Social Anthropology
- BI 340—Genetics and Eugenics
- EN 103—Introduction to Literature
- HI 131—Economic History of the United States
- PI 101—Introduction to Philosophy
- PS 341—Public Administration
- PS 342—Public Administration
- PS 431—Contemporary Political Thought
- PY 382—Child Psychology
- SO 213—Modern Social Problems

### Latin-American Area Studies

The development of closer political, cultural, and commercial relations among the nations of the New World has created a greater awareness in the United States, particularly in college circles, of the vast non-English speaking sections of North and South America. This awareness is rapidly spreading throughout the United States, but it is particularly evident in Arizona, because of its strategic location on the border of Latin America.

The Arizona State College at Tempe, in the hope of strengthening the State's position in Hispanic-American affairs, offers a program of studies designed to be of cultural and vocational value. Governmental departments and agencies, as well as innumerable private organizations, are constantly in need of persons trained in Latin-American affairs.

The program is intended primarily to acquaint American students with the culture and development of Latin America. The course of studies stresses a broad knowledge of Spanish, Latin-American literature, history, economics, geography, government, architecture, music, and art.

Students should select a major in social sciences, with minors in Spanish and geography, selected from within the curriculum leading to the degree of Bachelor of Arts. It is suggested that the following courses, in addition to the general education requirements, should be taken:

Social Studies		Hours	Spanish		Hours
HI 103	History of the U. S.	3	SP 101	Elementary Spanish	4
HI 104	History of the U. S.	3	SP 102	Elementary Spanish	4
HI 241	History of Latin America	3	SP 201	Intermediate Spanish	4
HI 242	History of Latin America	3	SP 202	Intermediate Spanish	4
HI 341	History of Mexico	3	SP 472	Spanish-American Civilization	3
HI 441	Dev. of Mexican Civilization	6			19
(Summer only, a study course in Mexico)					
3-EC 201	Principles of Economics	3	If possible, the student should also take SP 311, 312, Spanish Conversation (4) and SP 427, Spanish American Literature (3).		
3-EC 202	Principles of Economics	3			
3-EC 336	International Finance	2			
3-MK 335	International Trade	2			
AN 321	Indians of Mexico and Peru	3			
		34			
<b>Geography</b>					
GE 111	Elements of Geography	3			
GE 131	Economic Geography	3			
GE 223	Geography of South America	3			
GE 422	Geopolitics of Europe and the Near East	3			
GE 433	Geog. of Trade and Transportation	3			

15

## Public Service Training Program

It is anticipated that persons applying for positions in the public service in non-technical fields will have a broad cultural education with an adequate knowledge of history, political science, psychology, English, sociology, and economics. Non-technical Civil Service examinations stress the breadth of knowledge of a liberally educated person, his ability to reason clearly, his ability to quickly and accurately grasp and understand detail, and his rapidity and accuracy of judgment. While no program of courses is endorsed by the Federal Civil Service Commission, a study of the examinations given indicate that the following could be profitably taken as preparation for a career in the public service. The student should remember that high grades and outstanding accomplishments during his educational preparation is a highly desirable indication of probable ability and is an important factor in a Civil Service application.

Students preparing for public administration should enroll in the curriculum leading to the Bachelor of Arts or to the Bachelor of Science degree, and major in political science with a minor in economics. In cooperation with local governmental units, a laboratory in this and related programs is maintained in the Department of History and Political Science. It is suggested that the student include the following courses in his program.

Political Science		Hours	Sociology		Hours
PS 101	Modern Politics and Gov't	3	SO 101	Sociology	2
PS 111	Municipal Government	3	SO 332	Urban Sociology	2
PS 112	State and Local Government	3			6
PS 113	United States National Gov't	3	<b>Economics</b>		
PS 221	American Political Parties	3	3-EC 201	Principles of Economics	3
PS 312	Comparative National Gov'ts	2	3-EC 202	Principles of Economics	3
PS 341	Public Administration	3	3-EC 311	Economics of Income and Employment	3
PS 342	Public Administration	3	3-EC 321	Labor Economics	3
PS 351	International Politics	2	3-FI 331	Public Finance	3
PS 421	Political Opinion and Propaganda	2	3-MG 311	Personnel Administration	3
PS 431	Contemporary Political Thought	2			
		29			18

<b>History</b>		<b>English and Speech</b>	
HI 103 History of the United States	3	EN 211 Advanced Composition	3
HI-104 History of the United States	3	SE 200 Elements of Speech	2
HI 131 Economic History of the U.S.	3	SE 211 Public Speaking	2
HI 336 Recent American History	3		
	12		7
		<b>Psychology</b>	
		PY 100 Elementary Psychology	3
		PY 232 Business Psychology	3
		PY 367 Social Psychology	3
			9

Within the technical fields of governmental service, there are opportunities for botanists, biologists, zoologists, chemists, physicists, historians, sociologists, psychologists, mathematicians, linguists, journalists, and geographers. Students interested in one of these technical fields should consult with the head of the department of his major interest, or with the Dean of the College of Liberal Arts.

### Foreign Service Training Program

Training for the Foreign Service is designed to prepare the student for Department of State examinations for the position of Foreign Service Officer. Requirements for this examination include no specific courses, but a sequence of courses including the following subjects is recommended. The Department of State endorses no particular courses, but the requirements of the examinations have been carefully studied in preparing this sequence of courses. Because of the highly competitive nature of this examination and the relatively small number of vacancies, it has been found that unless students have a scholarship index of 3.5, they are not likely to qualify with a sufficiently high score to have much chance of appointment.

For specific requirements for the Foreign Service Examinations, the interested student should consult with members of the political science faculty. Copies of recent examinations may be had by writing to the Department of State, Washington, D. C.

In selecting a major, the student interested in the Foreign Service would do well to major in social studies, history, or political science. However, a major in Spanish, German or French, supplemented by minors in both history and political science would be acceptable.

Regardless of the major selected, the student should include the following courses in his program of study.



## School of Nursing

### Bachelor of Science in Nursing Curriculum

Students wishing to graduate with the degree of Bachelor of Science in Nursing will follow a four-year program. Graduates of the program will be eligible to take the examination for licensure as registered nurses in the state of Arizona and other states.

To provide the best clinical experience in all clinical fields, the School of Nursing utilizes the facilities of GOOD SAMARITAN HOSPITAL, the STATE HOSPITAL, various clinics and health agencies. It is recommended that the high school program of the student wishing to register in nursing should include at least three units of English, one unit of history and government, two units of mathematics, one unit of chemistry, and two units of a single foreign language. Additional work in science, language, English, and social studies is desirable. The nursing program consists of the completion of the program of general education of Arizona State College and the major in nursing. In general, the students will follow the program outlined below:

<b>FIRST YEAR</b>			
First Semester	Hours	Second Semester	Hours
EN 101 First Year English.....	3	EN 102 First Year English.....	3
PE 101 Freshman Physical Education.....	0.5	PE 102 Freshman Physical Education.....	0.5
Science or Mathematics.....	3-4	Science or Mathematics.....	3-4
Humanities or Social Science Elective.....	2-3	SO 101 Sociology.....	3
PY 100 Elementary Psychology.....	3	Humanities Elective.....	3
Major.....	3	Major.....	3
	16.5		16.5
<b>SECOND YEAR</b>			
First Semester	Hours	Second Semester	Hours
SE 200 Elements of Speech.....	2	HO 141 Elementary Nutrition.....	2
Physical Activity.....	0.5	Science.....	4
Science Elective.....	3	Major.....	5
Social Science or Humanities Elective.....	3	Humanities or Social Science Elective.....	4
Major.....	5	Physical Activity.....	0.5
PY 382 Child Psychology.....	3		
	16.5		15.5
<b>THIRD YEAR</b>			
First Semester	Hours	Second Semester	Hours
PY 371 Educational Psychology.....	3	Humanities or Social Science Elective.....	3
Major.....	12	Major.....	12
	15		15
<b>FOURTH YEAR</b>			
First Semester	Hours	Second Semester	Hours
Major.....	12	Major.....	13
Elective.....	4	Elective.....	3
	16		16

The details of the major sequence in Nursing are the subject of a separate brochure which may be secured by writing Miss Loretta Anderson, Director of the School of Nursing.

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Associated with the faculty in the School of Nursing and acting as members of the Curriculum Committee in developing the nursing program are:

Miss E. Loretta Anderson, (Director)

Mrs. Barger, Josephine, Director of Nursing, Good Samaritan Hospital.

Dr. Bateman, George M., Professor of Chemistry.

Mrs. Boan, Vurlyne, Assistant Director of Nurse Education; Good Samaritan Hospital.

Miss Elsik, Marguerite, Assistant Director of Nursing at Good Samaritan Hospital.

Miss Gabrielson, Rosamond, Assistant Director of Nursing at Good Samaritan Hospital.

Mrs. Pittman, Mary, Director of Nursing, Arizona State Hospital.

Dr. Rannells, Jessie, Professor of Home Economics.

# College of Education

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## Purpose

The purpose of the College of Education is to promote interest in the teaching profession and to prepare students to carry on effective work as teachers and administrators in the public schools. To accomplish this end, the aim is to acquaint the student with human nature, educational subject matter, methods of teaching and administration, and methods of social reconstruction commensurate with democratic social theory.

It is the belief of those concerned with teacher education that those who work with the children in our schools should be educated as well as trained. To this end a wide array of cultural and general educational background is provided. There is no conflict in the approach to develop a person who lives wholesomely and happily as well as one who realizes his greatest potentialities, both professionally and in other phases of living. The College is dedicated to these purposes as well as to a program of training leading to the degrees and certificates listed below.

## Organization

The courses of instruction offered by the College of Education are organized into groups so that a well-related sequence is established for important subject fields. These subject fields make for better organization in selecting courses to meet requirements for the various teacher education curriculums. This also provides a balanced program with virtually complete coverage in the field of education and with a wide array of specialization possibilities. The groups offered include: Kindergarten-Primary Education; Elementary Education; Secondary Education; Higher Education; Adult Education; Guidance and Counseling; School Administration and Supervision; Special Education; Audio-Visual Education; Social Foundations; Research and Surveys; Educational Psychology; Basic Courses in Education; and Library Science.

## Degrees

### Bachelor of Arts in Education Degree

The Bachelor of Arts in Education Degree is awarded after successful completion of a four year curriculum in teacher education. A minimum of 126 semester hours of work is required for each of the curriculums. A balanced program of activities for this degree provides work in well recognized basic areas.



### Master of Arts in Education Degree

A graduate program consisting of a minimum of 30 semester hours of properly arranged work leads to the degree of Master of Arts in Education. Students who complete any of the teacher education curriculums at Arizona State College at Tempe, may arrange for a program of studies leading to the degree of Master of Arts in Education. This degree is also available to graduates of other recognized institutions of higher learning by meeting the prescribed requirements. For specific reference to this program, see page 205 of this catalog.

### Education Specialist Degree

The degree, Education Specialist, is awarded for satisfactory completion of the Specialist Program of graduate studies. For specific reference to this degree, see page 207 of this catalog.

### Doctor of Education Degree

The degree, Doctor of Education, is awarded for satisfactory completion of the Doctoral Program of graduate studies. For specific reference to this degree, see page 208 of this catalog.

## Certification

### Arizona Certification

The State Board of Education issues the following types of certificates, preparation for which may be obtained at the Arizona State College at Tempe: (1) Kindergarten-Primary; (2) Elementary; (3) Pre-Secondary; (4) Secondary; (5) Administrative; (6) Administrative Supervisory; (7) Special in Home Economics; (8) Vocational in Home Economics. For complete details concerning certification, students should refer to the Rules and Regulations published by the State Board of Education, or consult with the Director of Teacher Education. As new certificates are approved by the State Board of Education, the College will attempt to offer preparation to meet fully their requirements.

The four-year Kindergarten-Primary and Elementary Teacher Education curriculums lead directly to the corresponding Arizona teaching certificates. The Pre-Secondary certificate (good for four years) may be obtained by completing the four-year Secondary Teacher Education Curriculum, and an additional six semester hours of graduate credit. The five-year Secondary Teacher Education Curriculum leading to the Master of Arts in Education degree encompasses all of the requirements for the full secondary certificate.

For conditions or requirements of other certificates, consult the Rules and Regulations published by the State Board of Education.

In some instances, transfer students or others not enrolled in a teacher education curriculum may meet certification requirements through education courses not listed in teacher education curriculums. In each case, a teacher education adviser should be consulted before the course is selected. Information regarding certification requirements may be obtained from the State Superintendent of Public Instruction.

## Directed Teaching

### Admission

Before admission, all candidates for directed teaching must meet the following requirements: (1) Junior or senior standing; (2) A cumulative scholarship index of 1.75 or better; (3) Have credit in all the required courses of the first two years of a teacher-education curriculum being followed; (4) In addition, those pursuing the *Kindergarten-Primary Curriculum* must have credit in Fundamentals of Teaching, Construction Activities, Plays and Games for the Kindergarten-Primary School, Kindergarten-Primary Curriculum, Science in the Elementary School, and Reading and Language Arts; those taking the *Elementary Curriculum* must have credit in Fundamentals of Teaching, Language Arts, and Elementary Curriculum. (Curriculum may be taken concurrently with directed teaching); those taking the *Secondary Curriculum* must have credit in Fundamentals of Teaching, and Methods of Teaching and Evaluating in Secondary Schools. (Methods of Teaching and Evaluating may be taken concurrently with directed teaching.) Modification of course sequences may be made for irregular and transfer students by the Director of Teacher Education; (5) Have X-ray taken within sixty days prior to assignment indicating that student is free from tuberculosis.

### Requirements

Ordinarily, students who are candidates for the bachelor's degree and elementary certification teach in the cooperating schools for one-half day for one semester either for the first or second half of the third or fourth year. Students who are preparing for secondary certification teach for one-quarter day for one full semester in either the first or second half of the fourth year. Students whose programs permit them to devote their full time to directed teaching spend all day in the cooperating schools and receive one semester hour of credit per week of successful directed teaching. Regularly scheduled conferences at the College are held during the directed teaching period. The student's load is limited to sixteen semester hours during the semester in which he is teaching. Student teachers are not permitted to take part in activities that interfere with their directed teaching, conferences, or other activities related to teaching in the cooperating school.

Students must count full time or part time employment as part of their load while they are doing directed teaching. Each

five hours of employment per week will be considered equivalent to a load of one semester hour in calculating the total 16 semester hour load permitted during the semester in which the student is teaching. It is recommended that students plan not to be employed during the directed teaching period.

### Training Schools Available

The College has available many fine schools or school systems for the training of student teachers. Others will be added as the program expands. Among those utilized at present are the following: The Ira D. Payne Training School on campus, Alhambra Elementary Schools, Balsz Elementary Schools, Chandler Schools, Creighton Elementary Schools, Gilbert Elementary Schools, Glendale Elementary Schools and High Schools, Kyrene Elementary School, Madison Elementary Schools, Mesa Schools, Osborn Elementary Schools, Phoenix Elementary Schools and High Schools, Roosevelt Elementary Schools, Scottsdale Schools, Tempe Elementary Schools and High School, and others. Students are assigned to schools other than those listed above only on approval of special requests.

Each of these schools presents its own particular type of organization and problems so that the student may receive training in any type of work desired from the kindergarten through the high school. All of these are regular public schools; therefore, students obtain their training under actual classroom conditions of the public school. Each student teacher is under direct guidance of a cooperating teacher and the Director of Teacher Education.

### Waiver

Students who have been employed as regular teachers in public, parochial, or Indian schools, may apply to the Director of Teacher Education, College of Education, for waiver of the Directed Teaching requirement. Waiver of Directed Teaching in the required grade level is granted by the Director of Teacher Education. Waiver of this requirement in no way changes the total number of semester hours required for graduation or for establishing residence.

Regular teaching experience in the required grade level of two years' duration within the past five years will be considered sufficient to waive the total directed teaching requirement.

Regular teaching experience in the required grade level of one year's duration within the past five years will be considered sufficient to waive one-half the directed teaching requirement.

Regular teaching experience of two or more years' duration prior to the past five years will be considered sufficient to waive one-half the directed teaching requirement.

### Additional Directed Teaching as Elective

Qualified undergraduate students whose programs will permit and who are enrolled in a teacher education curriculum may, with the approval of their adviser, the Director of Teacher Education and the Standards Committee of the College of Education, register in Directed Teaching for additional elective semester hours of credit above the number of semester hours required by their teacher education curriculum. Advisers and the Standards Committee will approve application for this privilege only when it is apparent that additional experience in Directed Teaching would be more beneficial to the student than the equivalent number of semester hours of other elective course work.

## Bachelor of Arts in Education Degree Curriculums

### General Education

The General Education requirements under each of the teacher education curriculums include the following:

1. *Communications* ..... 8 sem. hours
  - 1-EN 101, 102 ..... 6 sem. hours
  - 1-SE 200 or 1-SE 120 ..... 2 sem. hours
  
2. *Humanities* ..... 8 sem. hours
  - Option I**
  - Eight semester hours to be selected from the following, not more than one course in a subject ..... 8 sem. hours
  - 4-AC 100; 1-AH 102, 211, 212; 1-EN 103, 201, 202, 341, 342; 1-FL 100; 1-MU 105, 107; 1-PI 101, 228.
  - Option II**
  - 1-HU 201, 202 ..... 8 sem. hours
  - or
  - 1-HU 301, 302, and one course from the following: 1-AH 211, 212; 1-EN 201, 202, 341, 342; 1-FL 100; 1-MU 105; 1-PI 228. .... 8 sem. hours
  
3. *Social Sciences* ..... 9 sem. hours
  - Option I**
  - 1-HI 101, 102 or 103, 104..... 6 sem. hours
  - One course to be selected from the following: 1-AN

111; 3-GB 101; 3-EC 201; 1-PS  
101, %311; 1-SO 101..... 3 sem. hours

%Note: Only students under the Secondary Curriculum  
may select 1-PS 311.

### Option II

1-SS 101, 102 ..... 6 sem. hours

One course to be selected  
from the following: 1-HI

101, 102, 103, 104; #1-PS 311.. 3 sem. hours

#PS 311 may be used by students in the secondary cur-  
riculum to complete the requirements if Introduction to  
the Social Sciences is taken for six semester hours.

#### 4. *Sciences* ..... 11 sem. hours

At least one course to be se-  
lected from each of Groups  
1 and 2.

Group 1.—Physical Sciences—

1-PL 110, 410; 1-CH 111, 115;  
1-GE 111; 1-GL 111, 114; 1-  
PH 101, 112, 121.

Group 2.—Life Sciences—

1-BI 100; 1-BO 100; 1-ZO 100.

Group 3.—Mathematics—

1-MA 105, 116, 117, 118, 119.

#### 5. *Health and Adjustment* ..... 7 sem. hours

Physical Education Activity 2 sem. hours

1-HE 100 ..... 2 sem. hours

1-PY 100 ..... 3 sem. hours

A student is exempt from general education courses in his  
major teaching field. Majors in biological science are exempt from  
1-HE 100, Hygiene. Men in ROTC and students taking two or  
more semesters of marching band are required to have but one  
semester hour of physical education activity.

## Kindergarten-Primary Curriculum

The Kindergarten-Primary Curriculum offers specialized train-  
ing for students who wish to teach young children. The courses  
are designed to give the student a better understanding of young  
children and of their total personality development during the  
first years of their school adjustment. Special emphasis is given  
to the growth and development of the child and how he learns.  
There is a wide demand every year for teachers who complete the  
Kindergarten-Primary Curriculum.

This curriculum leads to the degree of Bachelor of Arts in  
Education and to certification for teaching in the kindergarten  
and grades one, two, and three.

## FRESHMAN YEAR

First Semester		Hours	Second Semester		Hours
1-EN 101	First Year English	3	1-EN 102	First Year English	3
*1-PL 110	Physical Universe	4	*1-BI 100	The Living World	4
*1-PY 100	Elem. Psychology	3	1-PE 102	Freshman Phys. Ed.	0.5
1-PE 101	Freshman Phys. Ed.	0.5	1-MS 102	Basic Military Sci. or	
1-MS 101	Basic Military Science or		1-AS 102	Basic Air Science	1.5
1-AS 101	Basic Air Science	1.5	*2-BE 111	Explor. of the Educ.	
Humanities		4	Profession		3
Electives		0 to 1.5	Humanities		4
			Electives		0 to 1.5
		16			16

## SOPHOMORE YEAR

First Semester		Hours	Second Semester		Hours
*2-BE 222	Foundations of Educ.	3	*1-HE 100	Hygiene	2
*1-SE 200	Elements of Speech	2	1-HI 102	Western Civil. or	
1-HI 101	Western Civil. or		1-HI 104	History of the U.S.	3
1-HI 103	History of the U. S.	3	1-PE Activity (men) (women)		0.5
1-PE Activity (men) (women)		0.5	*2-KP 211	Technq. in Story Tell.	2
1-MU 211	Kdg. and Elem. Mus.		*1-SO 101	Sociology	3
Meth.		2	1-MS 202	Basic Military Sci. or	
*2-EE 211	Children's Literature	3	1-AS 202	Basic Air Science	1.5
1-MS 201	Basic Military Sci. or		Electives		3 or 4.5
1-AS 201	Basic Air Science	1.5			
Electives		1 or 2.5			
		16			15

## JUNIOR YEAR

First Semester		Hours	Second Semester		Hours
2-KP 323	Constr. Activities	3	2-KP 323	Construction Activities	3
*2-BE 333	Funds. of Teaching	3	*2-KP 355	Reading and Lang. Arts	
*2-KP 344	Plays and Games for		in the K-P Grades		6
the K-P School		3	*2-KP 366	K-P Curric. and Tchg.	
*1-PL 320	Sci. for Elem. School	3	Problems		4
Electives		4	1-MU 311	Classroom Music in the	
			Elem. School		2
		16			15

## SENIOR YEAR

First Semester		Hours	Second Semester		Hours
*2-EP 411	Ed. Meas. and Eval.	3	*2-AV 411	A-V Aids in Educ.	2
*2-KP 417	Directed Teaching in		*1-PS 311	Const. Gov't	3
the K-P School		10	*1-HE 360	School-Com. Health	3
*Science		3	2-KP 428	Probs. of Teachers in	
			the K-P School		3
			Electives		5
		16			16

\*May be taken either semester.

## GRADUATE YEAR

For Graduate Degree Programs, See Graduate Bulletin.

**Major and Minor Teaching Fields.** A major or minor teaching field is not required of students pursuing the Kindergarten-Primary Curriculum.

**Professional Education.** In the Kindergarten-Primary Curriculum, 51 semester hours of education are required. Each required professional education course is selected for its specific contribution to the preparation of a well-trained and well-balanced teacher.

**Professional Semester.** Students in the Kindergarten-Primary Curriculum, whose program will permit, may register for KP 428, 3 hours; KP 417, 10 hours; and EP 411, 3 hours during the same semester. By registering for these courses and no others, students may enjoy a more flexible schedule of classes and a richer student teaching experience.

*Special Requirements and Electives.* Many electives are available to enrich the students' program. These should be selected in consultation with the student's adviser.

Students interested in young children but not in certification may elect any of the kindergarten-primary courses.

Students holding a bachelor's degree may work for the kindergarten-primary certificate on the graduate level. These courses are listed in the Graduate Bulletin.

## Elementary Curriculum

This curriculum prepares students for service in the elementary school. No major or minor teaching fields are required. It is advisable that the student take some work in the various departments of the college so as to have a broad knowledge covering many fields. Opportunities for employment as teachers are greatest in the elementary fields. By proper selection of courses of instruction it is possible for students who care to take the necessary extra time to qualify eventually for the secondary certificate also. Interested students will consult an educational adviser who will explain how both certificates may be obtained.

This curriculum leads to the degree of Bachelor of Arts in Education and to certification for teaching in the elementary school, grades one to nine inclusive.

FRESHMAN YEAR					
First Semester		Hours	Second Semester		Hours
1-EN 101	First Year English	3	1-EN 102	First Year English	3
*1-PL 110	Physical Universe	4	*1-BI 100	The Liv. World	4
*1-PY 100	Elementary Psychology	3	*2-BE-111	Exploration of the Educ. Profession	3
1-PE 101	Freshman Phy. Ed	0.5	1-PE 102	Freshman Phy. Ed	0.5
1-MS 101	Basic Military Science or		1-MS 102	Basic Military Science or	
1-AS 101	Basic Air Science	1.5	1-AS 102	Basic Air Science	1.5
	Humanities	4		Humanities	4
Electives		0 to 1.5	Electives		0 to 1.5
16			16		

SOPHOMORE YEAR					
First Semester		Hours	Second Semester		Hours
*1-SE 200	Elements of Speech	2	*1-HE 100	Hygiene	2
*2-EE 211	Children's Literature	3	*1-GE 111	Elements of Geography	3
1-HI 101	Western Civilization or		1-HI 102	Western Civilization or	
1-HI 103	History of the U.S.	3	1-HI 104	History of the U.S.	3
1-PE Activity (men) (women)		0.5	*2-BE 222	Foundations of Education	3
*1-SO 101	Sociology	3	1-PE Activity (men) (women)		0.5
1-MS 201	Basic Military Science or		1-MS 202	Basic Military Science or	
1-AS 201	Basic Air Science	1.5	1-AS 202	Basic Air Science	1.5
Electives		3 to 4.5	Electives		2 to 3.5
16			15		

JUNIOR YEAR					
First Semester		Hours	Second Semester		Hours
*1-AE 201	Public School Art	2	*2-BE 333	Fundamentals of Teaching	3
*2-EE 322	Language Arts	3	*2-EE 333	Language Arts	3
*1-MA 305	Arith. in the Elem. Sch.	3	*1-PL 320	Sci. for the Elem. Sch.	3
1-MU 312	Music in the Elem. Sch.	2	*1-PE 366	Playground Leadership	2
Electives		5	*2-EE 344	Elementary Curriculum	3
			Electives		2
15			18		

SENIOR YEAR					
First Semester		Hours	Second Semester		Hours
*2-EE 489	Prob. of Teachers in the Elem. School	3	*1-PS 311	Constitutional Gov't.	3
*2-EE 478	Directed Teaching in the Elem. School	10	*1-HE 360	School-Community Health	3
*2-EP 411	Ed. Meas. and Eval.	3	*2-AV 411	A-V Aids in Education	2
			Electives		8
		16			18

\*May be taken either semester.

#### GRADUATE YEAR

For Graduate Degree Programs, See Graduate Bulletin.

*Professional Education.* In the elementary curriculum, 39 semester hours of education are required. Each required professional education course is selected for its specific contribution to the preparation of a well-trained and well-balanced teacher.

*Professional Semester.* Students in the elementary curriculum, whose program will permit, may register for special sections of EE 489, 3 hours; EE 478, 10 hours; and EP 411, 3 hours during the same semester. This permits a richer student teaching experience through teaching all day in a selected school for ten weeks.

*Electives and Specialization.* Carefully selected electives from various departmental offerings are listed on the check sheets which are supplied by the student's adviser.

Students registered under the elementary curriculum who wish to specialize in industrial arts, home economics, art, or music, may omit the following required courses in the elementary curriculum provided these 13 semester hours are used together with the existing semester hours of electives to develop a teaching field.

EE 211 Children's Literature .....	3
1-MA 305 Arithmetic in the Elementary School.....	3
1-PL 320 Science for the Elementary School.....	3
1-AE 201 Public School Art.....	2
1-PE 366 Playground Leadership.....	2

Students who request this option must have the major teaching field approved by the appropriate department head and the entire program must be approved by the Dean of the College of Education.

Students who plan to teach at the junior high school level may group their electives in major and minor teaching fields to suit their teaching interests.

While a major is not required for either kindergarten-primary or elementary curriculums, it may be desirable to take additional work in selected subject fields. Electives may be used toward specialization in a field.



Secondary Curriculum

This curriculum prepares students for service in the secondary school. Majors and minors are completed in the teaching fields desired. The curriculum has considerable flexibility for those who wish to pursue specialized work in addition to the regular expectations for teaching. This curriculum leads to the degree of Bachelor of Arts in Education and to the certification for teaching in the secondary school.

FRESHMAN YEAR

First Semester		Hours	Second Semester		Hours
1-EN 101	First Year English.....	3	1-EN 102	First Year English.....	3
*1-PL 110	Physical Universe.....	4	*1-BI 100	The Liv. World.....	4
*1-PY 100	Elem. Psychology.....	3	*2-BE 111	Explor. of Educ. Prof.....	3
1-PE 101	Freshman Phys. Ed.....	0.5	1-PE 102	Freshman Phys. Ed.....	0.5
1-MS 101	Basic Military Sci. or		1-MS 102	Basic Military Sci. or	
1-AS 101	Basic Air Science.....	1.5	1-AS 102	Basic Air Science.....	1.5
Major, minor, or electives.....		4 to 5.5	Major, minor, or electives.....		4 to 5.5
		16			16

SOPHOMORE YEAR

First Semester		Hours	Second Semester		Hours
*1-SE 200	Elements of Speech.....	2	*1-HE 100	Hygiene.....	2
1-HI 101	Western Civilization or		1-HI 102	Western Civilization or	
1-HI 103	History of the U.S.....	3	1-HI 104	History of the U.S.....	3
1-PE Activity (men) (women).....		0.5	1-PE Activity (men) (women).....		0.5
*2-BE 222	Founds. of Educ.....	3	1-MS 202	Basic Military Sci. or	
1-MS 201	Basic Military Sci. or		1-AS 202	Basic Air Science.....	1.5
1-AS 201	Basic Air Science.....	1.5	Science.....		3
Major, minor, or electives.....		6 or 7.5	Major, minor, or electives.....		6 or 7.5
		16			16

JUNIOR YEAR

First Semester		Hours	Second Semester		Hours
*2-BE 333	Funds. of Teaching ____	3	*2-SE 311	Methods of Tchg. and	
Major, minor, or electives.....		8	Eval. in the Sec.		
Humanities .....		4	School .....		4
			Major, minor, or electives.....		8
			Humanities .....		4
		15			16

SENIOR YEAR

First Semester		Hours	Second Semester		Hours
*1-FS 311	Const. Government.....	3	*2-SE 444	Principles and Curricula	
*2-SE 433	Directed Tchg. in the		of Sec. Schools.....		3
Sec. School.....		6	*1-HE 360	School-Commun.	
Major, minor, or electives.....		7	Health .....		3
			Major, minor, or electives.....		9
		16			15

\*May be taken either semester.

GRADUATE YEAR

For Graduate Degree Programs, See Graduate Bulletin.

General Pattern

The general pattern for the secondary curriculum provides for the following:

General education .....	43 hours
Professional education .....	22 hours
Major teaching field .....	45 hours
Minor teaching field .....	15 hours
School Community Health .....	3 hours
Constitutional Government .....	3 hours
Military Science or electives .....	6 hours

It can be seen that it is necessary to utilize general education hours to build a minor and to some extent a major. This is explained in the following paragraph under *Major and Minor Teaching Fields*.

*Major and Minor Teaching Fields.* Students under the secondary curriculum are required to complete a major and a minor teaching field.

A major teaching field shall consist of 45 semester hours of work, 24 semester hours of which shall be in courses in a subject field from one department, and the remainder of which shall consist of courses from the same or related fields. A minimum of 18 semester hours in the major teaching field should be upper division courses. Wherever practicable, general education courses which are appropriate should be used to meet the requirements of a major teaching field. Courses included in the general education requirements or options, if taken, may be applied toward meeting the semester hour requirements of a major teaching field if such courses are specified as required courses for the major teaching field, or if approved by the adviser as satisfying major teaching field requirements. Under the secondary curriculum, 1-PS 311, Constitutional Government may be used in meeting the social studies requirement in general education.

A minor teaching field shall consist of 15 semester hours in a subject field from one department. In order to meet the various graduation requirements under the secondary curriculum, it is usually necessary to use general education courses to build the minor teaching field to the extent of 8 semester hours.

In selecting major and minor teaching fields, students should keep in mind the requirements of the North Central Association, the Arizona State Board of Education, and the combinations usually assigned beginning teachers in Arizona high schools. Information concerning these matters can be obtained at the office of the Director of Teacher Education.

### Major Teaching Fields Available

Art	Mathematics
Biological Sciences	Choral Music
Business	Instrumental Music
Chemistry	Choral & Instrumental Music
English	Health Education
French	Physical Education
German	Physics
Speech and Dramatics	Earth Science
Spanish	History
Home Economics	Political Science
Industrial Arts	

### Minor Teaching Fields Available

In addition to minors in the above fields, the following minors are available:

Journalism	Music
Speech	Physical Science
Dramatics	Geography
Library Science	Geology

Considerable attention should be given to the selection of teaching combinations. In many instances, teachers must assume positions which call for a major and one or two minors. Although there is no definite pattern concerning teaching combinations, it should be profitable to consider the more prevalent ones. Information regarding these may be obtained from the student's adviser or the Director of Placement.

*Professional Education.* In addition to the courses listed under other requirements, all students registered under the secondary curriculum are required to take 22 semester hours of work in education. The following must be included: BE 111, 222, 333; SE 311, 433, and 444.

*Recommended Electives and Specialization.* Students are urged to plan electives in conjunction with suggestions from their advisers.

*Certification for Teaching in Arizona.* Completing the requirements for the degree of Bachelor of Arts in Education under the Secondary Curriculum does not meet the requirements for a certificate to teach in Arizona high schools. Students who graduate under this curriculum must have in addition to the degree of Bachelor of Arts in Education, *at least six semester hours of graduate work to qualify for a Pre-Secondary Teaching Certificate.* An exception to this exists for those who complete the Vocational in Home Economics.

Students registered under the Secondary Curriculum may qualify for the elementary certificate by meeting the minimum requirements as set forth by the State Department of Public Instruction, that is, Elementary Curriculum, a course in Language Arts, and six additional hours of directed teaching in grades one to eight, inclusive. The additional teaching shall be in grades exclusive of those in which the first six semester hours of directed teaching were taken. However, it is strongly recommended that EE 322, and 333, Language Arts, be taken before directed teaching.

### Major and Minor Teaching Fields

Following are detailed suggestions for preparing to teach in each of the respective major and minor fields. In each case it is advisable to complete a major teaching field of 45 semester hours in the first four years. Candidates for the master's degree plan-

ning to teach in the secondary schools may complete an additional 15 semester hours of graduate credit in the fifth year. In each case the student should consult his adviser in the planning of his course program.

### **The Teaching of Art**

As the stress in modern art education is upon creative expression carried on for the development of integrated personalities, adjusted to society, and upon art as a functional agent which helps pave the way to better social understanding, the art teacher must secure in his training a broad concept of art in relation to general education. All teacher candidates must become qualified to coordinate the broad social values of art with the total public school program.

*Major Teaching Field in Art.* Major teaching field in art consists of 45 semester hours work of which 18 hours shall be in upper division. The following courses are required: 1-AR 111, 114, 122, 141, 142, 161, 171, 181, 182; 1-AH 211, 212. Elective courses in art should be selected upon consultation with adviser.

*Minor Teaching Field in Art.* This field consists of 15 hours. The following should be included: 1-AR 111, 141; 1-AE 201; 1-AH 211.

### **The Teaching of Biological Sciences**

*Major Teaching Field in the Biological Sciences.* Forty-five hours as follows: 1-BI 120, 340, 410; 1-BO 100, 170; 1-MI 201, 202; 1-ZO 100, 150, 271, 441, 460, 472. At least one hour credit in research. At least one of the following: 1-ZO 174, 175, 176. Also, 1-BO 450 or 1-ZO 396. Supporting courses not counted as part of the major, but required, are 1-PL 110; 1-CH 111; 1-PH 101. Those electing the physical sciences as a minor may use these courses as part of the 15 semester hour minimum.

*Graduate Requirements.* 1-BI 480 is required either in the six hours of graduate work for a pre-secondary teaching certificate or as part of the master's degree requirement. The following biological science courses or their equivalent are required: 1-BI 340, 410g or 514; 1-ZO 441g, 396 or 1-BO 450g, plus elementary work in ecology, invertebrate zoology, ornithology or herpetology or mammalogy and plant systematics. If the above requirements have been fulfilled, a further selection may be made with the consent of the adviser.

*As soon as the student decides to major in the biological sciences, he should inquire at the department office, Biol. Sci. Annex, for a curriculum check sheet and arrange for a guidance conference with his adviser. Failure to do this may result in a needless loss of time toward graduating.*

*Minor Teaching Field in the Biological Sciences.* The minimum requirement is 15 semester hours which must include 1-BO 100; 1-ZO 100; 1-BI 340. 1-BI 100 may be used but not 1-ZO 102. Optional courses should be selected only with the approval of the minor adviser.

**The Teaching of Business**

*Major Teaching Field in Business.* The major teaching field for business subjects in high school consists of the following semester hours: 3-AC 101, 102; 3-OA 102, 143, 211, 212; 3-MK 251; 3-GB 233, 305. An additional group of semester hours must be selected from the following with approval of the adviser: 3-OA 101, 113, 114, 201, 331, 344; 3-EC 202, 311; 3-MK 201; 3-AC 181, 201; 3-GB 306, 321; 3-MG 301, 311; 3-FI 325; 3-BE 480.

Minor teaching fields are offered in secretarial and general business.

*Minor Teaching Field in Secretarial.* Fifteen hours from the following: 3-AC 101; 3-OA 102, 114, 143, 211, 212, or 331; 3-EC 311.

*Minor Teaching Field in General Business.* Fifteen hours from the following: 3-AC 101, 181; 3-OA 102, 143; 3-GB 305; 3-MG 301, 311; 3-EC 202.

**The Teaching of English, Speech, Dramatics and Journalism**

This department offers major teaching fields in English and in speech and dramatics as outlined below. To complete either of these, 45 semester hours in the field must be completed in the first four years. Candidates for the master's degree planning to teach English, speech, or dramatics in secondary schools should complete additional courses in these subjects during the fifth year.

*Major Teaching Field in English.* First year, 1-EN 101, 102, and 151. Second year, 1-EN 221, and 222; 1-HI 251 and 252. Third year, 1-EN 211, 312, 313, 341, and 3 hours of upper division English electives. Fourth year, 1-EN 471, 480, and sufficient hours of upper division English electives.

*Major Teaching Field in Speech and Dramatics.* First year, 1-SE 120; 1-DR 111. Second year, 1-SE 211, 241, 312; 1-DR 112. Third year, 1-SE 313; 1-DR 311, 313; 1-EN 313. Fourth year, 1-SE 421, 424; 1-EN 312; plus additional hours during the four years selected from the following courses: 1-EN 421, 422, 441, 453, 454; 1-PY 362, and any other courses in speech.

*Minor Teaching Field in English.* 1-SE 200 or 211; 1-EN 151, 221 and 222; 6 hours of upper division English.

*Minor Teaching Field in Journalism.* 1-EN 211; 1-JO 110, 211, 212, 313.

*Minor Teaching Field in Speech.* 1-SE 120, 211, 312, and six hours of upper division speech.

*Minor Teaching Field in Dramatics.* 1-DR 111, 112, 311, 313; 1-SE 241.

**The Teaching of Foreign Languages**

*Major Teaching Field in French.* A major teaching field in French consists of 45 semester hours of work, of which 18 hours shall be

in upper division courses in French. These hours must be completed in the first four years. The following courses are required: 1-FR 201, 202, 311, 312, 321, 322; 1-FL 480; and 1-EN 221 or one of the following: 1-HI 322, 324, 421, 422. Enough additional hours during the four years to meet the requirement may be selected from the following courses or from other courses in French: 1-GR 101-102, 201-202; 1-LA 101-102, 201-202; 1-RU 101-102, 201-202; 1-SP 101-102, 201-202.

*Major Teaching Field in German.* A major teaching field in German consists of 45 semester hours of work, of which 18 hours shall be in upper division courses in German. These hours must be completed in the first four years. The following courses are required: 1-GR 201, 202, 311, 312, 321, 322; 1-FL 480, and 1-EN 221, or 201, or 103, or one of the following: 1-HI 321, 322, 324, 422. Enough additional hours during the four years to meet the requirement may be selected from the following courses, or from other courses in German: 1-SP 101-102, 201-202; 1-FR 101-102, 201-202; 1-LA 101-102, 201-202; 1-RU 101-102, 201-202.

*Major Teaching Field in Spanish.* A major teaching field in Spanish consists of 45 semester hours of work, of which 18 hours shall be in upper division courses in Spanish. These hours must be completed in the first four years. The following courses are required: 1-SP 201, 202, 313, 314, 321, 322, 427; and 1-EN 221 or one of the following: 1-HI 241, 242, 341, 422. Enough additional hours during the four years to meet the requirement may be selected from the following courses or from other courses in Spanish: 1-FR 101-102, 201-202; 1-GR 101-102, 201-202; 1-LA 101-102, 201-202; 1-RU 101-102, 201-202.

*Minor Teaching Field in Spanish.* The minor of 15 hours will consist of 1-SP 201-202 and seven more hours work in the field.

*Minor Teaching Field in French.* The minor of 15 hours will consist of 1-FR 201-202 and seven more hours work in the field.

*Minor Teaching Field in German.* The minor of 15 hours will consist of 1-GR 201-202 and seven more hours work in the field.

### **The Teaching of Home Economics**

*The Major Teaching Field in Home Economics.* To complete a major teaching field in home economics, 45 semester hours of work must be completed in the first four years and not less than 18 of the total shall be upper division. Candidates for the master's degree planning to teach home economics in the secondary schools should complete additional courses in the fifth year. The major requirements for graduation, including those for the vocational certificate, are as follows: 1-HO 111, 122, 124, 131, 141, 142, 221, 222, 223, 231, 232, 241, 331, 332, 333, 431; 1-AH 102, and a three-hour elective in home economics or a related field. The above, along with other requirements for graduation and vocational certification, may be met in four years by selecting the minor in general science or social studies.

*Minor Teaching Field in Home Economics.* This field requires 15 semester hours. 1-HO 123, 143 are recommended. The remaining courses may be chosen with the approval of the departmental adviser.

### **The Teaching of Industrial Arts**

*Major Teaching Field in Industrial Arts.* For students planning to teach in the secondary schools, 45 semester hours of industrial arts courses are required, including 4-IA 109, 342, and 480. The student will select 25 semester hours from the following courses: 4-AC 150; 4-CO 494; 4-IA 103, 121, 125, 135, 161, 222, 227; 4-ME 111; 4-TE 110; 4-TM 161, 164, 169, 274. Twelve hours are to be elected, with the approval of the adviser, from a field of specialization.

*Minor Teaching Field in Industrial Arts.* Fifteen semester hours of work are required, including 4-IA 342 and 480.

### **Library Science**

Under the secondary curriculum, students who desire to prepare for high-school librarianship may choose a minor teaching field in library science. The undergraduate program of professional education for high school librarians should also include a systematic survey of the various fields of knowledge, concentration in one or more subject fields taught in Arizona High Schools, background courses of special value in library science, study of professional principles and methods common to school libraries.

Students who have completed a minor teaching field in library science at the undergraduate level may select library science as a field of specialization at the graduate level.

*Minor Teaching Field in Library Science.* The minor in library science consists of 15 semester hours. The courses are: LS 341, 342, 373, 363, and 383, and a choice of either LS 223 or 233.

*The Graduate Field of Specialization in School Library Services.* Ordinarily at least 10 semester credit hours should be earned among the following professional courses: LS 442, 472, 462, 482, 463, 464.

### **The Teaching of Mathematics**

*Major Teaching Field in Mathematics.* For students who choose mathematics as their major teaching field, forty-five hours in mathematics and related subjects are required, including Advanced Calculus (1-MA 221, 321), and at least three other courses in the upper division level in consultation with the adviser. At least one mathematics course should be taken each semester. In addition, various courses in physical science and foreign languages (both French and German) are strongly recommended. Transfer students must take at least two courses in mathematics at this college. 1-MA 105, 220, 305, do not count toward a mathematics major.

*Minor Teaching Field in Mathematics.* The minor teaching field in mathematics consists of fifteen hours in mathematics, including a year of calculus. Transfer students must take at least one course in mathematics at this College.

### **The Teaching of Music**

Under the secondary curriculum, students may choose a major teaching field in Choral, Instrumental, or Double Music Major. The major teaching field in music prepares for teaching all vocal classes commonly taught in high schools. The major teaching field in Instrumental Music is for those desiring to teach Orchestra, Band and Instrumental Ensembles. The major teaching field in the Double Music Major is for those preparing to teach in both fields.

Music majors in the secondary curriculum must have their performing medium approved before they can be accepted as majors. All freshmen and transfer students must be auditioned by a faculty committee before registering. Auditions will be held on the first day before registration each semester. A minimum level of musical literacy is presumed for all students wishing to major in music. Entrance tests in reading of notation and performing proficiency are given to each entering student. These examinations may lead to advanced standing in Freshman courses and are useful for proper placement of the student. If minimum requirements cannot be met, the student may meet these requirements by assignment to classes below the Music Major college credit level. Consult with the music supplement or the Head of the Music Department for complete information.

All students majoring in music are required to attend a minimum number of approved on-campus recitals set by the faculty during the school year as partial fulfillment of the course requirements in their major performing field.

*Major Teaching Field in Choral Music.* The courses listed below are required. Freshman year, 1-MU 121, 122; Applied Music, Major 4 hours; Minors and Ensembles 6 hours. Sophomore year, 1-MU 221, 222; Applied Music, Major 4 hours; Minors and Ensembles 6 hours. Junior year, 1-MU 241, 242, 468; 1-MP 339; Applied Music, Major 4 hours; Minor and Ensembles 2 hours. Senior year, 1-MU 431; Applied Music, 4 hours. All students in this field are advised to elect 8 hours of foreign language among their humanities credits.

*Major Teaching Field in Instrumental Music.* The courses listed below are required. Freshman year, 1-MU 121, 122; Applied Music, Major 4 hours; Minors and Ensembles 6 hours. Sophomore year, 1-MU 221, 222; Applied Music, Major 4 hours; Minors and Ensembles 6 hours. Junior year, 1-MU 241, 242, 465; 1-MP 340; Applied Music, Major 4 hours; Minor and Ensembles 4 hours. Senior year, 1-MU 427, 433, 461; Applied Music, 6 hours.

*Double Music Majors.* Only students with a good background in both instrumental and vocal music can be accepted as candidates



for the Double Music Major. The courses covered duplicate those requirements in the Choral Major and Instrumental Major and therefore cannot be completed in eight regular semesters. Advanced standing in one or two performing fields or extra summer sessions or semesters are needed. Students who wish to pursue the Double Music Major should check with the Department Head and complete all proficiency examinations for advanced standing before entering this program.

*Minor Teaching Field in Music.* For a minor in music, the student should consult the music education adviser for the best courses to develop his competence in this area.

### **The Teaching of Health and Physical Education**

*Major Teaching Field in Health Education.* This teaching field consists of 45 semester hours. At least 18 of the 45 hours must be in upper division courses. Required courses: 1-HE 370, 371, 461, 481; 1-PE 160; 1-MI 201; 2-BE 444; 2-AV 411; 1-ZO 102; 1-AN 411; and 1-PY 367. The remaining courses shall be chosen by the student in consultation with his adviser.

*Minor Teaching Field in Health Education.* Fifteen hours are required, including six hours of upper division courses. Required courses: 1-HE 370, 371, 488. The remaining semester hours shall be chosen by the student in consultation with his adviser.

*Major Teaching Field in Physical Education.* This teaching field requires 45 semester hours. At least 18 of the 45 hours must be in the upper division courses. Required courses: 1-PE 150, 151, 161, 220, 250, 251, 360, 367, 368, 371. Also, each student must have satisfied departmental requirements for First Aid, and Water Safety prior to the completion of the junior year. Additional courses required for men: 1-PE 364, 365, 385, 386, 462, plus two hours of selected activity courses. Additional courses required of women: 1-PE 262, 280, 361, 385, or 386. The remaining semester hours must be in physical education or related courses, and shall be selected by the student in consultation with his adviser.

*Minor Teaching Field in Physical Education.* Fifteen semester hours are required for the minor. Required of men: 1-PE 368, 371; four hours to be selected from 1-PE 150, 151, 250, and 251; and two hours to be selected from 1-PE 364, 365. The remaining three hours shall be selected by the student in consultation with his adviser. Required of women: 1-PE 360, 367, 368, 371; plus four hours to be selected from 1-PE 150, 151, 250, 251; and the remaining hour to be selected by the student in consultation with her adviser.

### **The Teaching of the Physical Sciences**

Students planning to teach the physical sciences in the high school should take basic courses in biology, chemistry, physics, and mathematics. Over-specialization is to be avoided because the prospective science teacher may find it necessary to give instruction in more than one subject.

To complete a major teaching field, 45 semester hours of work, in physical sciences and related fields, must be completed

in the undergraduate program. A minimum of 18 semester hours shall be upper division courses. Not less than 24 semester hours must be completed in one subject field and the remaining 21 hours from related fields. Major teaching fields are offered in: (1) Earth Science, (2) Chemistry, and (3) Physics.

Each student should begin to plan his program with his adviser not later than the second year. Required courses for each teaching major are listed. The optional courses in science and related subjects should be selected under the guidance of the adviser. Candidates for the master's degree in secondary science teaching should complete additional science work during the period of graduate training.

*Major Teaching Field in Earth Sciences.* Students planning to teach geography, social studies, and related subjects should select this field. Undergraduate courses required: 1-GE 111, 131, 151, 221, 222, 223, 321; 1-GL 113. Optional courses will be selected from geography, and related fields with adviser's approval. Recommended courses for graduates: 1-GE 421, 422, 424, 433.

*Major Teaching Field in Chemistry.* Those interested in teaching chemistry should minor in mathematics, physics, or biology. Undergraduate courses required: 1-CH 113, 115, 225, 231 (or 1-CH 331, 332); 1-PH 111, 112; 1-MA 118.

*Major Teaching Field in Physics.* Those interested in teaching physics should take a minor in mathematics. Undergraduate courses required: 1-PH 111, 112, 221, 261, 333; 1-PL 410; 1-CH 113, 115; 1-MA 118.

*Minor teaching Fields in Physical Sciences.* Minor teaching fields are offered in physical science, geography, geology, chemistry, and physics. Each student desiring a science teaching minor shall begin planning with his science adviser not later than the beginning of his third year. Any courses required for the major will not be accepted as meeting the requirements for the minor teaching field. A minor consists of 15 semester hours. Required program for each minor teaching field is given below.

Minor Teaching Field in Chemistry. 1-CH 113, 114, (or 115), 231, 464 or 471.

Minor Teaching Field in Geography. 1-GE 111, 131, 142, 221, 222, 223, 311, 321, 322, 421; 1-GL 113, 114.

Minor Teaching Field in Geology. 1-GL 113, 114, 246, 321, 322, 452, 461.

Minor Teaching Field in Physics. 1-PH 111, 112, 221, 261.

Minor Teaching Field in Physical Sciences. 1-CH 111; 1-GL 111; 1-PH 101, 221.

### **The Teaching of Social Sciences**

It is recommended that students planning to teach social sciences complete basic courses in history, economics, sociology, and political science, since they may be expected to teach several branches of social science. Major teaching fields are offered in his-

tory and political science. A major teaching field requires the completion in the undergraduate program of 45 hours of work in one of the two fields specified above. Lower division courses must total at least 21 hours out of 45, and not less than 18 of the total shall be upper division. Candidates for the master's degree preparing to teach social sciences should complete additional courses in one or more of these fields during the fifth year. Programs for each of the teaching fields are outlined below. At least three-fourths of the hours completed toward a major must be taken in the social sciences.

*Major Teaching Field in History.* This field is for those who expect to teach mainly history. The following courses are required: 1-HI 101-102, 103-104, 311. In addition this teaching field requires at least nine hours in lower division courses chosen from the following: 1-HI 121-122, 131, 132, 241, 242, 251-252, 261; 1-PS 101, 112, 113, 221, 231; 1-SO 101; 3-EC 201; and 16 hours in upper division courses chosen from the following: 1-HI 321, 322, 324, 334, 336, 337, 338, 339, 341, 421, 422, 431, 432, 433, 434, 451, 452, 454, 471, 472, 481; 1-PS 312, 351, or from other related courses selected in conference with the social science adviser.

*Major Teaching Field in Political Science.* This field is for those who plan to teach mainly government or civics. The following courses are required: 1-HI 103-104, 311, and 1-PS 112, 113. In addition this teaching field requires at least nine hours in lower division courses chosen from the following: 1-HI 101-102, 131, 251-252; 1-PS 111, 221, 231; 1-SO 101; 3-EC 201; and 16 hours in upper division courses chosen from the following: 1-HI 433, 434, 454; 1-PS 312, 341, 351, 411, 421, 423, 431; or from other related courses selected in conference with the social science adviser.

Minor teaching fields are offered in history and political science. A student desiring a minor in these fields should begin planning with his social science adviser not later than the beginning of his third year. Failure of the student to have his program approved by the adviser may result in a needless loss of time toward graduating. A minor consists of 15 semester hours in the subject field. Not less than six hours in a minor should be in upper division courses. A student must obtain the written approval of the social science adviser before enrolling in a course which he may wish to use in the minor, if not listed below.

*Minor Teaching Field in History.* The following courses are required: 1-HI 103-104, and one course from 1-HI 101, 102, 121, 122, 131, 132, 251, 252, 261; 1-PS 112, 113, 221. In addition this teaching field requires six hours upper division courses chosen from the following: 1-HI 311, 321, 322, 324, 336, 337, 338, 339, 341, 421, 422, 431, 432, 433, 434, 451, 454, 472, 481; 1-PS 312, 351.

*Minor Teaching Field in Political Science.* The following courses are required: 1-PS 112, 113; and one from the following: 1-HI 101, 102, 103, 104; 1-PS 111, 221, 231. In addition this teaching field requires six hours in upper division courses chosen from the following: 1-HI 433, 434, 454; 1-PS 312, 341, 351, 411, 421, 423, 431.

# College of Business Administration

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## Purpose

The primary purpose of the College of Business Administration is to prepare students for positions of responsibility in the business community. The undergraduate and graduate degree curricula are designed to provide (1) a basic background of general education helpful to informed, thinking citizens in a democracy, (2) a mastery of basic business tools and skills and an understanding of business procedures, and (3) a specialized and professional knowledge of a selected field of business.

In addition to the regular degree curricula, other programs of study in the College of Business Administration are designed to meet special needs. Preparation for the teaching of business subjects in the secondary schools is offered in cooperation with the College of Education. A special secretarial program is offered for students who wish to prepare for office positions but who do not plan to spend four years in college. Evening and extension courses are conducted for qualified persons who are regularly employed and who would otherwise be unable to enroll in college courses. Short courses and institutes on a non-credit basis are organized in cooperation with various business groups for the furtherance of in-service training of employed personnel.

## Organization

The courses of instruction offered by the College of Business Administration are organized into groups in order that a related sequence may be established for the various subject fields. These subject fields include Accounting, Advertising, Economics, Finance, General Business Administration, Insurance, Management, Marketing, Office Administration, Real Estate, and Business Education.

In addition to the regular instructional program, the College of Business Administration operates a Bureau of Business Services which gathers and publishes business and economic data pertaining to the surrounding community. The Bureau serves as a laboratory for students in the College of Business Administration who wish to secure practical experience in business research and analysis.

## Degrees

### Bachelor of Science Degree

The College of Business Administration awards the Bachelor of Science Degree upon successful completion of a four-year cur-

riculum of 126 semester hours as prescribed on the following pages. Students may select one of the following ten fields of specialization:

- |                                    |                          |
|------------------------------------|--------------------------|
| 1. Accounting                      | 6. Insurance             |
| 2. Advertising                     | 7. Management            |
| 3. Economics                       | 8. Marketing and Selling |
| 4. Finance                         | 9. Office Administration |
| 5. General Business Administration | 10. Real Estate          |

Students who wish to qualify to teach business subjects in high school should major in business education. Under this program, the student enrolls in the College of Education but specializes in business courses for his major teaching field. This curriculum leads to the Bachelor of Arts in Education Degree and certification for teaching business subjects in the Arizona secondary schools. The courses required in business for this curriculum are listed under the secondary curriculum section of the College of Education (Page 155).

### Master of Science Degree

The College of Business Administration awards the Master of Science Degree upon successful completion of a graduate curriculum consisting of a minimum of 30 semester hours. Under the Master of Science Degree program the student may choose a curriculum in either Accounting or Business Administration.

## Bachelor of Science Degree Curriculum in Business Administration

Students seeking a Bachelor of Science Degree in the College of Business Administration must satisfactorily complete a curriculum of 126 semester hours as indicated below.

I. General Education and Other Required Courses.....	51 sem. hrs.
II. Business Administration Core Curriculum.....	30 sem. hrs.
III. Field of Specialization.....	24 sem. hrs.
IV. Electives .....	21 sem. hrs.
	Total 126 sem. hrs.

### General Education

- |                                |             |
|--------------------------------|-------------|
| 1. <i>Communications</i> ..... | 8 sem. hrs. |
| 1-EN 101, 102 .....            | 6 sem. hrs. |
| 1-SE 200 .....                 | 2 sem. hrs. |
| 2. <i>Humanities</i> .....     | 8 sem. hrs. |

#### Option I

Eight semester hours to be selected from the following, not more than one course in a subject:

4-AC 100; 1-AH 102, 211, 212; 1-EN  
103, 201, 202, 341, 342; 1-FL 100;  
1-MU 105, 107; 1-PI 101, 228..... 8 sem. hrs.

### Option II

1-HU 201, 202 ..... 8 sem. hrs. or  
1-HU 301, 302 and one course from  
the following:  
1-AH 211, 212; 1-EN 201, 202, 341,  
342; 1-FL 100; 1-MU 105; 1-PI 228..8-9 sem hrs.

3. *Social Sciences*..... 9 sem. hrs.  
1-HI 101, 102, or HI 103, 104..... 6 sem. hrs.  
EC 201 ..... 3 sem. hrs.
4. *Sciences* .....11 sem. hrs.

At least one course to be select-  
ed from each group.

Group 1. Physical Sciences—

1-PL 110, 410; 1-CH 111, 115; 1-GE  
111; 1-GL 111, 114; 1-PH 101, 112  
121.

Group 2. Life Sciences—

1-BI 100; 1-BO 100; 1-ZO 100.

Group 3. Mathematics—

1-MA 105, 116, 117, 118, 119.

5. *Health and Adjustment*.....6 or 7 sem. hrs.  
Physical Education Activity...1 or 2 sem. hrs.  
1-HE 100..... 2 sem. hrs.  
1-PY 100..... 3 sem. hrs.

A student is exempt from general education courses in his major field. Men in Military or Air Science and students taking two or more semesters of marching band are required to take only one semester hour of physical education activity.

### 6. Other Required Courses

EC 202 Principles of Economics..... 3 sem. hrs.  
Military or Air Science.....(6) or  
Electives outside of the College of  
Business Administration.....(5) 5 or 6 sem. hrs.

Total General Education and Other Required Courses..51 sem. hrs.

## Business Administration Core Curriculum

In order to obtain an understanding of the fundamentals of business operation, and to develop a broad business background, every student seeking a Bachelor of Science degree in the College of Business Administration must complete the following courses:

GB 101 Introduction to Business..... 3  
AC 101 Elementary Accounting..... 4

AC 102 Elementary Accounting.....	4
GB 233 Business Communication.....	3
MK 251 Principles of Marketing.....	3
GB 305 Business Law.....	3
GB 321 Business Statistics.....	4
FI 325 Business Finance.....	3
MG 301 Principles of Management.....	3

Total..... 30 sem. hrs.

Note: Proficiency in the use of basic skills in communication and mathematics is essential for students planning to prepare themselves for careers in business. Freshmen who do not demonstrate an adequate facility with business mathematics and in the use of calculating machines and typewriters must acquire these basic skills prior to being admitted to the professional courses in business administration (those numbered 300 and above).

### Field of Specialization Requirements

A field of specialization consists of a pattern of 24 semester hours in related courses falling primarily within a given subject field. Fields of specialization are available in Accounting, Advertising, Economics, Finance, General Business Administration, Insurance, Management, Marketing and Selling, Office Administration, and Real Estate.

**Accounting.** Accounting is a fast-growing professional field. The demand for accountants exceeds the supply and will continue growing for many years. This field of specialization includes the essential academic training for: (1) those wishing to prepare themselves for professional careers in public accounting and (2) those wishing to prepare themselves to operate their own businesses, or to accept positions as controllers, heads of accounting divisions, cost accountants, or traveling auditors, or to serve in any of the numerous positions offered in federal, state, and local governments.

A field of specialization in accounting shall consist of a minimum of 24 semester hours. The following 20 hours must be included:

AC 221 Mathematics of Accounting.....	2
AC 201 Intermediate Accounting.....	3
AC 202 Intermediate Accounting.....	3
AC 331 Cost Accounting.....	3
AC 383 Advanced Accounting.....	3
AC 415 Financial Statement Analysis.....	3
AC 451 Federal and State Income Tax.....	3

To complete the field of specialization the student, with the approval of his adviser, shall select 4 hours or more from the group below:

AC 341 Budgetary Control.....	2
AC 409 Governmental and Institutional Accounting.....	3
AC 442 Controllership .....	2
AC 444 Machine Accounting Procedures.....	2
AC 452 Federal and State Income Tax.....	3
AC 481 Auditing Theory and Practice.....	3
GB 306 Business Law.....	3

The following courses in related fields are suggested as electives for the student specializing in the field of accounting: FI 305, 331, 441; GB 431; IN 251; 1-EN 211; 1-SE 311.

Note: All accounting students should take 1-MA 116, Intermediate Algebra, as a part of the General Education requirement in Science and Mathematics.

*Advertising.* Use of the mass communications media for conveying ideas and information to customers, employees, stockholders, and the general public is an essential part of modern business operation. This field of specialization offers students an opportunity to prepare for careers in advertising, public relations, and related activities dealing with mass communications. Employment opportunities include positions with advertising agencies, retail stores, manufacturing firms, newspapers, and broadcasting stations.

A field of specialization in advertising shall consist of a minimum of 24 semester hours. The following 13 hours must be included:

AD 275 Advertising Principles.....	3
AD 311 Advertising Campaigns.....	2
AD 312 Advertising Campaigns.....	2
MK 201 Principles of Selling.....	3
MK 383 Marketing Research.....	3

To complete the field of specialization the student, in consultation with his adviser, shall select 11 hours or more from the group below:

AD 371 Radio and Television Advertising.....	3
AD 401 Public Relations.....	2
AD 461 Advertising Management.....	3
AD 322 Retail Promotion and Display.....	2
1-JO 110 Introduction to Communications.....	3
MK 303 Marketing Practices.....	3
MK 321 Principles of Retailing.....	3

For further background in related fields, the following courses are suggested as electives: MK 334, 335, 411, 412; GB 431; 1-EN 211; 1-JO 211, 313; 1-PY 232, 367; 1-RT 230, 332, 431; 1-SO 101.

*Economics.* The study of economics affords an opportunity for the student to acquire a general knowledge of the operation of business and economic systems. This knowledge provides a sound



basis for successful business ownership and control. Specialized courses are included to develop ability in the use of the tools of economic theory and analysis. Such tools are essential for graduates who wish to qualify for government or business positions requiring formal training in economics.

The field of specialization in economics shall consist of a minimum of 24 semester hours. The following 12 hours must be included:

FI 301 Money and Banking.....	3
EC 311 Economics of Income and Employment....	3
EC 401 Intermediate Price Analysis.....	3
EC 441 History of Economic Thought.....	3

In addition the student shall select a minimum of 12 semester hours from the group below to complete the field of specialization:

EC 321 Labor Economics.....	3
EC 351 Economics of Public Utilities.....	3
EC 412 Business Cycles.....	2
EC 336 International Economics.....	2
EC 331 Comparative Economic Systems.....	3
EC 461 Current Economic Problems.....	3
EC 453 Government and Business.....	3
FI 331 Public Finance.....	3
FI 441 Investments .....	3
GB 422 Statistical Analysis.....	3
MK 471 Price Policies.....	2

The following courses in related fields are suggested as electives: 1-GE 131; 1-GL 461; 1-HI 131; 1-SO 101.

*Finance.* The field of specialization in finance provides the student with general understanding of the financial operations of business and government, as well as knowledge of the specific fields of banking, investments, commercial credit, and the financing of various types of businesses.

A field of specialization in finance shall consist of a minimum of 24 semester hours. The following 17 hours must be included:

FI 305 Credits and Collections.....	2
FI 301 Money and Banking.....	3
FI 331 Public Finance.....	3
FI 441 Investments .....	3
FI 461 Cases in Business Finance.....	3
AC 415 Financial Statement Analysis.....	3

To complete the field of specialization the student, in consultation with his adviser, shall select 7 hours or more from the group below:

AC 201 Intermediate Accounting.....	3
AC 202 Intermediate Accounting.....	3
AC 451 Federal and State Income Tax.....	3

EC 311 Economics of Income and Employment....	3
EC 412 Business Cycles.....	2
EC 336 International Economics.....	3
GB 306 Business Law.....	3
IN 251 Principles of Insurance.....	3
MG 463 Business Policies.....	3
RE 251 Real Estate Principles.....	3
RE 331 Real Estate Appraisal and Finance.....	3
4-AE 308 Agricultural Finance.....	3

Suggested electives: GB 431; 1-PY 232; 1-SE 311.

*General Business Administration.* This field offers the opportunity for a broad survey of all phases of business operation. It is particularly suitable for (1) those students who are planning to operate their own businesses and seek a broad business background, (2) those who are preparing for jobs in large organizations with training programs in which specialization is taught after employment, (3) those who desire a general business background at the undergraduate level prior to taking more specialized graduate work.

A field of specialization in general business administration shall consist of a minimum of 24 semester hours selected by the student, in consultation with his adviser, from the list below. Four of the ten subject areas must be represented in the courses selected. A minimum of four senior-level courses (numbered 400 or above) must also be included.

*Accounting*

AC 331 Cost Accounting.....	3
AC 451 Federal and State Income Tax.....	3
AC 415 Financial Statement Analysis.....	3

*Advertising*

AD 275 Advertising Principles.....	3
AD 401 Public Relations.....	2

*Economics*

EC 311 Econ. of Income and Employment.....	3
EC 321 Labor Economics.....	3
EC 453 Government and Business.....	3

*Finance*

FI 305 Credits and Collections.....	2
FI 301 Money and Banking.....	3
FI 441 Investments .....	3

*General Business Administration*

GB 306 Business Law.....	3
GB 341 Transportation .....	3
GB 422 Statistical Analysis.....	3
GB 431 Business Report Writing.....	3
GB 451 Business Research Methods.....	3

*Insurance*

IN 251 Principles of Insurance..... 3

*Management*

MG 311 Personnel Administration..... 3

MG 331 Industrial Management..... 3

MG 463 Business Policies..... 3

*Marketing*

MK 201 Principles of Selling..... 3

MK 303 Marketing Practices..... 3

MK 321 Principles of Retailing..... 3

MK 411 Sales Management..... 3

*Office Administration*

OA 351 Principles of Office Management..... 3

OA 452 Office Systems and Procedures..... 3

*Real Estate*

RE 251 Real Estate Principles..... 3

RE 302 Real Estate Management..... 3

*Insurance.* Academic preparation for professional work in insurance sales, insurance adjustment, and insurance management is offered through this program. A field of specialization in insurance shall consist of a minimum of 24 semester hours. The following 12 hours must be included:

IN 251 Principles of Insurance..... 3  
 IN 321 Life Insurance..... 3  
 IN 331 Fire and Marine Insurance..... 3  
 IN 341 Casualty, and Surety Insurance..... 3

To complete the field of specialization the student, in consultation with his adviser, shall select 12 hours or more from the following:

EC 401 Intermediate Price Analysis..... 3  
 FI 301 Money and Banking..... 3  
 FI 441 Investments ..... 3  
 GB 306 Business Law..... 3  
 GB 422 Statistical Analysis..... 3  
 MK 201 Principles of Selling..... 3  
 MK 411 Sales Management..... 3  
 RE 251 Real Estate Principles..... 3  
 RE 331 Real Estate Appraisal and Finance..... 3

Suggested electives: AC 415; AD 275; GB 431; 1-PY 232; 1-SE 311.

*Management.* The management function includes the planning, organizing, motivating, and controlling of business operations. It deals with both human elements and material or physical factors. Through selection of courses, as outlined below, the student may place his major emphasis upon either personnel and human rela-

tions aspects of management or industrial management in manufacturing plants. A field of specialization in management shall consist of a minimum of 24 semester hours. The following 18 hours must be included:

MG 311 Personnel Administration.....	3
MG 331 Industrial Management.....	3
EC 321 Labor Economics.....	3
MG 335 Methods and Motion Study.....	3
GB 451 Business Research Methods.....	3
MG 463 Business Policies.....	3

The remainder of the required courses shall be selected by the student in consultation with his adviser as follows:

Those students planning careers in industrial relations or personnel administration shall select at least 6 semester hours from:

MG 413 Job Evaluation.....	2
MG 422 Employee Training and Supervision.....	2
MG 423 Industrial Relations and Collective Bargaining .....	3
MG 338 Industrial Safety.....	2
1-PY 333 Techniques of Selection in Industry.....	3

Those students planning careers in industry, production, or related fields of management shall select at least 6 semester hours from:

MG 432 Production Control.....	2
MG 433 Statistical Quality Control.....	2
4-ME 251 Mechanical and Industrial Processes.....	2
MK 355 Purchasing .....	3
AC 331 Cost Accounting.....	3
MG 491 Operations Research.....	3

Suggested electives, in addition to other courses from the groups above, include: AC 415; EC 311; 4-IE 451; 4-ME 252; 1-PY 362, 367; 1-SE 311.

*Marketing and Selling.* The continuing expansion of production and the increase in the variety of goods and services available will require additional personnel in all phases of marketing activity. Opportunities for careers in a number of related areas are open to students who specialize in some phase of distribution. Through proper selection of courses, a student may place emphasis upon preparation for a career in (1) selling and sales management, (2) retail merchandising and management, (3) purchasing and industrial procurement, or (4) foreign trade, or he may choose to obtain a broad background in the field in preparation for a career with a large marketing organization which provides its own specialized training program.

A field of specialization in marketing and selling shall consist of a minimum of 24 semester hours. The following 17 hours must be included:

MK 201 Principles of Selling.....	3
MK 303 Marketing Practices.....	3
MK 321 Principles of Retailing.....	3
MK 383 Marketing Research.....	3
MK 471 Price Policies.....	2
AD 275 Avertising Principles.....	3

To complete the field of specialization the student, in consultation with his adviser, shall select 7 hours or more from courses listed below. The various groupings are merely suggestive and do not preclude the student's choosing courses from more than one group or working out with his adviser the most satisfactory combination of courses for his particular career goal.

Recommended for students planning careers in selling and sales management:

MK 411 Sales Management.....	3
MK 412 Sales Promotion Policies.....	2
MK 332 Wholesaling .....	2

Recommended for students planning careers in retail buying, merchandising, and store management:

MK 423 Retail Buying and Stock Control.....	2
MK 424 Retail Store Management.....	3
AD 322 Retail Promotion and Display.....	2

Recommended for students planning careers in purchasing and industrial procurement:

MK 355 Purchasing .....	3
MK 334 Industrial Marketing.....	2
MG 331 Industrial Management.....	3
GB 341 Transportation .....	3

Note: Students interested primarily in purchasing may elect to substitute MK 355, Purchasing, for MK 321, Principles of Retailing; and MK 334, Industrial Marketing, for AD 275, Advertising Principles, in the 17 hours of required courses.

Recommended for students planning careers in foreign trade:

MK 335 International Trade.....	2
EC 336 International Economics.....	2
1-GE 131 Economic Geography.....	3

Note: Students interested primarily in foreign trade may elect to substitute MK 335, International Trade, for MK 321, Principles of Retailing, in the required course group. Courses in the language and geography of foreign areas in which the student expects to be employed should be included among the general elective courses.

Suggested electives, in addition to other courses from the above groups, include: AC 415; AD 461; FI 305; GB 306, 431; MG 311; 1-PY 232; 1-SE 311; 1-SO 101.

*Office Administration.* The course work in this field is designed to prepare students for either secretarial positions or managerial positions in business offices. Through the selection of courses, as outlined below, the student may place his major emphasis upon either of these fields.

A field of specialization in office administration shall consist of a minimum of 24 semester hours. The following 12 hours must be included:

OA 102 Intermediate Typewriting.....	2
OA 232 Records Systems and Filing.....	2
OA 344 Office Appliances.....	2
OA 351 Principles of Office Management.....	3
GB 431 Business Report Writing.....	3

To complete the field of specialization the student, in consultation with his adviser, shall select 12 or more hours from courses listed in the groups below:

Recommended for those students planning secretarial careers:

OA 113 Elementary Gregg Shorthand.....	3
OA 114 Intermediate Gregg Shorthand.....	3
OA 201 Advanced Typewriting.....	2
OA 211 Beginning Transcription.....	3
OA 312 Advanced Transcription.....	3
OA 331 Secretarial Procedures.....	3

Recommended for those students planning supervisory or administrative careers in offices:

OA 452 Office Systems and Procedures.....	3
AC 201 Intermediate Accounting.....	3
AC 202 Intermediate Accounting.....	3
MG 311 Personnel Administration.....	3
MG 422 Employee Training and Supervision.....	2
MG 463 Business Policies.....	3

The following courses in related fields are suggested as electives: AC 181; FI 305; MK 201; 1-EN 211; 1-PY 232, 362; 1-SE 311.

*Real Estate.* Courses in real estate are designed to acquaint students with the basic information, knowledge, and practices pertaining to real property and the real estate business. This field of specialization is the academic foundation for careers in various aspects of real estate work: sales, acquisition and development, taxation, management of property, title searching and legal work, appraisal, and finance.

A field of specialization in real estate shall consist of a minimum of 24 semester hours. The following 12 hours must be included:

RE 251 Real Estate Principles.....	3
RE 302 Real Estate Management.....	3
RE 331 Real Estate Appraisal and Finance.....	3
RE 411 Real Estate Law.....	3

To complete the field of specialization the student, in consultation with his adviser, shall select 12 hours or more from the following:

RE 441 Real Estate Land Development.....	3
RE 461 Real Estate Problems.....	3
AC 451 Federal and State Income Tax.....	3
AD 275 Advertising Principles.....	3
FI 441 Investments .....	3
GB 306 Business Law.....	3
IN 251 Principles of Insurance.....	3
MK 201 Principles of Selling.....	3

The following courses in related fields are suggested for inclusion among the student's electives: 1-HO 223; 4-AC 432; 1-PS 111; 1-SO 101; 1-PY 232; 1-SE 311.

### Elective Courses

Sufficient elective courses are to be selected by the student to complete the total of 126 semester hours required for graduation.

## FOUR-YEAR CURRICULUM OUTLINE

The following is a suggested outline to indicate to the student how the general education, Business Administration core curriculum, and field of specialization courses may be arranged as a four-year program of study. For details in developing his individual program the student is urged to consult his curriculum adviser frequently.

FIRST YEAR			
First Semester	Hours	Second Semester	Hours
1-EN 101 First Year English.....	3	1-EN 102 First Year English.....	3
GB 101 Introduction to Business.....	3	1-PY 100 Elementary Psychology.....	3
Mathematics or Science.....	3 or 4	Mathematics or Science.....	3 or 4
1-HI 101 Survey of Western Civilization or 103 History of the U. S. ....	3	1-HI 102 Survey of Western Civilization or 104 Hist. of the U. S. ....	3
1-PE 101 Freshman Phys. Ed.....	0.5	1-PE 102 Freshmen Phys. Ed.....	0.5
1-AS 101 Basic Air Science or MS 101 Basic Military Science.....	1.5	1-AS 102 Basic Air Science or MS 102 Basic Military Science.....	1.5
1-HE 100 Hygiene.....	2	Elective .....	2-4
Elective .....	2		
15.5 to 17.5		15.5 to 17.5	
SECOND YEAR			
First Semester	Hours	Second Semester	Hours
AC 101 Elementary Accounting.....	4	AC 102 Elementary Accounting.....	4
EC 201 Principles of Economics.....	3	EC 202 Principles of Economics.....	3
*GB 233 Bus. Communication.....	3	*MK 251 Principles of Marketing.....	3
*Science or Math.....	3 or 4	*1-SE 200 Elements of Speech.....	2
Humanities .....	2-4	Humanities .....	2-4
1-AS 201 Basic A. Science or MS 201 Basic Military Science.....	1.5	1-AS 202 Basic Air Science or MS 202 Basic Military Science.....	1.5
1-PE Activity.....	0.5	1-PE Activity.....	0.5
15.5 to 17.5		15.5 to 17.5	
THIRD YEAR			
First Semester	Hours	Second Semester	Hours
*GB 305 Business Law.....	3	*MG 301 Principles of Management .....	3
*GB 321 Business Statistics.....	4	*FI 325 Business Finance.....	3
Field of Specialization and Electives .....	4-6	Field of Specialization and Electives .....	10
Misc. Gen. Education.....	3-5		
16		16	

<b>FOURTH YEAR</b>			
First Semester	Hours	Second Semester	Hours
Field of Spec. and Electives.....	16	Field of Spec. and Electives.....	16

Note: In the field of specialization in accounting, students will enroll in AC101 and AC102 during the first year, postponing history or science until later in their program. In some other fields of specialization students should schedule beginning courses in their field during the sophomore year, postponing one of the general education courses until later. The student should consult his adviser for details of the course sequence in the field of specialization.

### GENERAL REGULATIONS

Each student enrolling in the College of Business Administration will be assigned an adviser upon the basis of the subject-matter field in which he is primarily interested. The student should follow the sequence of courses suggested in the four-year curriculum outline and the recommendations of his adviser in completing the prescribed background and tool courses in preparation for the subsequent professional program.

The third and fourth years constitute the professional program of the undergraduate curriculum. For admission to the professional program the student must (1) have attained junior standing, (2) have completed all Business Administration core-curriculum courses numbered below 300, (3) have completed at least 32 semester hours in general education and related background courses, including Principles of Economics (EC 201, 202), and have demonstrated his proficiency in business mathematics, and in use of calculating machines and typewriters.

A student must earn a minimum of 30 semester hours of credit, including 24 in professional business courses (numbered 300 or above), after admission to the professional program in order to be eligible for the Bachelor of Science Degree in the College of Business Administration. Only those regular undergraduate students who have been admitted to the professional program will be permitted to enroll in 400 level courses (other than the courses in economics).

To be accepted for credit as part of the professional program in Business Administration, all courses transferred from other institutions must carry prerequisites similar to those of the courses which they are replacing at Arizona State College.

Any exceptions to the core curriculum and field of specialization requirements of the College of Business Administration must be approved by the Standards Committee.



## PRE-LAW CURRICULUM

Pre-law students may pursue a program of study in the College of Business Administration as well as in the College of Liberal Arts. A thorough understanding of the principles and practices of business will prove valuable in the practice of law. Accounting is especially valuable since it provides an understanding of the meaning and interpretation of balance sheets and income statements. It is a part of the "language of the lawyer." Courses in economics, insurance, statistics, taxation, business and public finance, and labor relations are also recommended for any student planning to enter the legal profession.

The admission requirements of colleges of law differ considerably. The student should communicate with the dean of the law school he hopes to attend and plan his program to meet the requirements of that school. Many law schools require a baccalaureate degree for admission whereas others permit admission upon completion of three years of college work. Arizona State College cannot accept responsibility for the admission to law school of students following any pre-law program. A four-year and a three-year curriculum are offered for students wishing to complete their pre-law in one of the various fields of business. The four year program affords a better business preparation for a career in law.

### Four-Year Curriculum

Students who plan to take a bachelor's degree prior to entering law school may follow any of the standard curricula in the College of Business Administration. Regular advisers in each field will assist the student in selecting both required and elective courses which will be of particular value in the study of law.

### Three-Year Curriculum

A student may select a three-year program in the College of Business Administration, and if after completing 98 semester hours, he is admitted to an accredited law school, 28 semester hours completed in law school may be counted toward meeting the requirements for a Bachelor of Science Degree at Arizona State College. Since the 28 semester hours of the first year of law school are accepted as electives for the Bachelor of Science Degree in business administration, this program permits no other electives during the first three years.

The student who wishes to enter law school upon the completion of 98 hours and to use credits earned in law school to qualify for the Bachelor of Science Degree must complete all general education requirements, all core requirements of the College of Business Administration, and a field of specialization as indicated below:

General Education (See pages 163-164)..... 51 hours  
 College of Business Administration  
 Core Curriculum (See pages 164-165)..... 30 hours  
 Field of specialization in accounting, economics, or  
 finance as listed below:

Accounting	Economics
AC 201 Inter. Accounting.....3	FI 301 Money and Banking..3
AC 202 Inter. Accounting.....3	EC 311 Econ. of I. and E.....3
AC 383 Adv. Accounting.....3	EC 321 Labor Econ.....3
AC 415 Fin. St. Analysis.....3	EC 441 Hist. of Econ. Tht.....3
AC 451 Income Tax.....3	EC 453 Govt. and Business...3
AC 452 Income Tax.....3	FI 441 Investments .....3
Finance	
	FI 301 Money and Banking..3
	FI 441 Investments .....3
	AC 201 Inter. Accounting.....3
	AC 415 Fin. St. Analysis.....3
	AC 451 Income Tax.....3
	GB 306 Business Law.....3

A grade-point ratio of 2.0 or above is required in both the course work taken at Arizona State College and in the school of law.

Students who pursue this program must obtain a statement in writing from the Dean of the College of Business Administration giving senior-in-absentia privileges before entering the law school. At the end of his first year in law school, the student must have completed a total of 126 hours of college credit in pre-law and law combined. He must then present a signed testimonial from the dean of the law school to the Registrar at Arizona State College, Tempe, which shall include a statement of courses taken, grades achieved, and a recommendation that the degree of Bachelor of Science be granted by this College.

A student following the three-year pre-law curriculum should consult the pre-law adviser in the College of Business Administration upon his first enrollment at Arizona State College.

### SPECIAL SECRETARIAL PROGRAM

A special program is offered for those who do not plan to complete a four-year degree program but who wish to qualify for office positions in one or two years of study. Students who complete the curriculum outlined below will receive a certificate of proficiency. The 64-hour program may be completed in less than two years by enrollment in summer sessions.

A student who has had previous instruction in typewriting and shorthand may be permitted to enter advanced courses. Additional business subjects may be included to meet the student's needs.

A student who decides later to complete a degree program may count the courses earned in the special secretarial program as regular credit toward the degree, but must complete all requirements as outlined in a degree curriculum.

**FIRST YEAR**

First Semester	Hours	Second Semester	Hours
1-EN 101 First Year English.....	3	1-EN 102 First Year English.....	3
OA 101 Beginning Typewriting.....	2	OA 102 Intermediate Typewriting...	2
OA 113 Elementary Gregg Shorthand .....	3	OA 114 Intermediate Gregg Shorthand .....	3
GB 101 Introduction to Business...	3	1-PY 100 Elementary Psychology...	3
GB 141 Mathematics of Business...	2	OA 143 Business Machines.....	2
Freshman Phys. Ed.....	0.5	Freshman Phys. Ed.....	0.5
Elective .....	2	Elective .....	2
	Total 15.5		Total 15.5

**SECOND YEAR**

First Semester	Hours	Second Semester	Hours
AC 101 Elementary Accounting.....	4	AC 181 Payroll and Miscellaneous Taxes .....	2
OA 211 Beginning Transcription...	3	OA 212 Advanced Transcription...	3
1-SE 200 Elements of Speech.....	2	OA 344 Office Appliances.....	2
GB 233 Business Communication...	3	OA 331 Secretarial Procedures....	3
OA 232 Record Systems and Filing	2	1-PE Activity.....	0.5
1-PE Activity.....	0.5	Electives .....	6
Elective .....	2		
	Total 16.5		Total 16.5

# College of Applied Arts and Sciences

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## Purposes

The purpose of the College of Applied Arts and Sciences is to provide a college education of such fundamental background and scope that a student may achieve competency in one of the fields offered by the Divisions of Agriculture, Architecture, Engineering, and Technology. Every effort is made to carry on a well rounded, well integrated program which will not only give the student proficiency in his professional field but also will develop character, judgment, ideals, breadth of view, general culture, and physical well-being.

## Organization

The College of Applied Arts and Sciences is divided into the following Divisions of instruction:

Agriculture  
Architecture  
Engineering  
Technology

The completion of a four-year curriculum in agriculture, construction, engineering, and technology leads to the degree of Bachelor of Science. The completion of a five-year curriculum in architecture leads to the degree of Bachelor of Science. In agriculture, a minimum of 126 semester hours of credit is required for graduation; in construction, 130 semester hours; in engineering, 134 semester hours; in technology, a minimum of 130 semester hours; and in architecture, a minimum of 164 semester hours.

## General Education

Higher education should provide the student not only with competency in his chosen subject field, but also with experiences which facilitate the student's growth in ability to perceive significant relationships, to make intelligent value judgments, to express himself with ease, clarity, and good taste, and to develop the qualities of character and personality requisite for a successful career. For these reasons the student's curriculum will include study in communications, the humanities, the social sciences, the sciences, and health and adjustment. The order in which the selected courses of study are taken is not prescribed, although in certain degree programs specific courses may be required. In all cases, prerequisites must be followed.

The General Education requirements under each of the curriculums offered in the College of Applied Arts and Sciences include the following:

1. *Communications* ..... 8 sem. hours
  - 1-EN 101, 102 ..... 6 sem. hours
  - 1-SE 200 ..... 2 sem. hours
2. *Humanities* ..... 8 sem. hours

**Option I**

Only one course may be selected from any subject area. Eight hours to be selected from the following:  
 AC 100, 1-AH 102, 211, 212;  
 1-EN 103, 201, 202, 341, 342;  
 1-FL 100; 1-MU 105, 107; 1-PI 101, 228 ..... 8 sem. hours

**Option II**

1-HU 201, 202 or 1-HU 301, 302, and one course from the following: 1-AH 211, 212;  
 1-EN 201, 202, 341, 342; 1-FL 100; 1-MU 105; 1-PI 228 ..... 8 sem. hours

3. *Social Sciences* ..... 9 sem. hours

**Option I**

1-HI 101, 102 or 1-HI 103, 104 6 sem. hours  
 One course to be selected from the following:  
 1-AN 111; 3-GB 101; 3-EC 201; 1-PS 101; 1-SO 101..... 3 sem. hours

**Option II**

1-SS 101, 102 ..... 6 sem. hours  
 One course to be selected from the following:  
 1-HI 101, 102, 103, 104..... 3 sem. hours

4. *Sciences* .....14 sem. hours

At least one course to be selected from each of the following groups:  
 Group 1. Physical Sciences—  
 1-CH 111, 115; 1-GE 111; 1-GL 111, 114; 1-PH 101, 112, 121; 1-PL 110, 410.  
 Group 2. Life Sciences—  
 1-BI 100; 1-BO 100; 1-ZO 100.  
 Group 3. Mathematics—  
 1-MA 105, 116, 117, 118, 119.

5. <i>Health and Adjustment</i> .....	7 sem. hours
Physical Education Activity	2 sem. hours
1-HE 100 .....	2 sem. hours
1-PY 100 .....	3 sem. hours

A student is exempt from general education courses in his major field. Engineering students are exempt from general education courses in the sciences and in mathematics. Men in R.O.T.C., and students taking two or more semesters of marching band, are required to have but one semester hour of physical education activity.

## Division of Agriculture

### Purpose

The primary purpose of this Division is to prepare students for the production and management phases of agriculture. The curriculum and courses offered are planned to meet the needs of the following students: (1) Those who are interested in preparing for Farm and Ranch Management and who wish to obtain a degree of Bachelor of Science with emphasis on some particular phase of livestock or crop production; (2) Those preparing for a career in some phase of agricultural production and who wish to obtain a degree of Bachelor of Science with a field of specialization in Crop Production or Livestock Production; (3) Those not planning to graduate but desiring to take one or more years of college preparation for some agricultural vocation; (4) Those who wish to take certain electives in agriculture while pursuing another curriculum; (5) Those who desire pre-forestry or pre-veterinary training.

### Organization

Courses of instruction in the Division of Agriculture are offered in three general areas with subdivisions as follows:

1. Farm Management & Economics
2. Crop Production
  - Agronomy
  - Horticulture
  - Agricultural Mechanics
3. Livestock Production
  - Animal Husbandry
  - Dairy Husbandry
  - Poultry Husbandry

Advisers from the special interest fields will offer students counsel and assistance in program planning.

## Bachelor of Science Degree Curriculum in Agriculture

The completion of the four-year agriculture curriculum leads to the Bachelor of Science degree. A total of 126 semester hours of credit is required for graduation including the general education and field of specialization requirements. In completing general education requirements in the sciences, students in agriculture should select 1-CH 111 or 115; 1-BI 100; and 1-ZO 100; to satisfy prerequisites for agriculture courses.

### Field of Specialization Requirements

In addition to the academic requirements outlined, students are required to demonstrate ability in the practical phases of production and husbandry related to their field of specialization. Students without adequate farm background can gain experience in farm practices at the College Training Farm or on any farm that meets the approval of the adviser. Upon application for graduation, the student's adviser will indicate satisfactory completion of this requirement.

*Farm Management.* This field of specialization is designed to prepare students to enter the business of farming and ranching as operators or managers of productive agricultural enterprises. With in this field students may specialize in the management of crop production or livestock production enterprises. The field includes three important requirements: (1) Training in agricultural economics and management; (2) Training in the applied sciences or agricultural production; (3) Practical experience in production and management.

To meet the requirements of a field of specialization in Farm Management, the following courses are required: AG 130, 232, 234; AH 150; AE 100; AM 122, 126; AG 246. In addition, students are required to complete 24 hours in Farm Management and Economics and at least 15 hours in some phase of Livestock Production or 15 hours in some phase of Crop Production.

The practical experience program is initiated at the College Training Farm at the beginning of the sophomore year. During the junior and senior year this experience program will be planned to meet individual student needs and will be carried out under the supervision of the student's adviser.

*Crop Production.* This field of specialization is designed for students desiring practical training in crop production. It prepares students for positions as field representatives for commercial fertilizer and insecticide companies, for machinery companies, and other businesses associated with crop production. It also provides valuable training for students preparing for positions as field foremen on farms and ranches, or as agronomists with U. S. Government or state agencies where practical knowledge is essential.

For the student who wishes to continue his training toward an advanced degree in agronomy this field of specialization will give him the basic courses. With the help of his adviser, he should select additional science courses which will provide an adequate foundation for advanced study.

To meet the requirements of this field of specialization, the following courses are required: AG 130, 232; AH 150; AE 100; 1-CH 231 and 1-BI 340. In addition, students are required to complete 24 hours in some phase of crop production and at least 15 hours of supporting work in a related field.

*Livestock Production.* This field of specialization is designed to develop within the student a sound understanding while learning the practical application of the principles of livestock husbandry. The student learns to select, breed, feed, and manage livestock in an efficient and economical manner. The livestock production curriculum, while developing leadership, provides valuable training for the student preparing for ownership or for the position of herdsman of a beef, dairy, poultry, sheep, or swine enterprise. It prepares students for positions as field representatives for breed organizations, meat and milk processing plants, feed manufacturers and distributors, hatcheries and other businesses associated with the livestock industry. It also prepares students for work with Federal, State and local governmental agencies requiring specialized training in the practical phases of livestock production. Students who desire further training toward an advanced degree should consult their adviser, and choose elective courses that will adequately prepare them for advanced study.

To meet the requirements of this field of specialization, the following courses are required: AG 130, 232; AH 150; AE 100; 1-CH 231, and 1-BI 340. In addition, students are required to complete 24 hours in some phase of livestock production and at least 15 hours of supporting work in a related field.

## Special Programs

### Agriculture Education

The first two years of the curriculum preparing students to teach vocational agriculture in the high school is offered as a special program. Students should consult their adviser and select their courses to meet the requirements of the college from which they plan to obtain their agriculture education degree.

### Pre-Veterinary and Pre-Forestry

The requirements for the first two years of courses in forestry and veterinary work vary considerably in the different colleges offering these programs. The student is advised to obtain a copy of the catalog from the school he plans to attend and select his program accordingly. The following course of study will meet



most of the requirements if the student carefully selects electives to meet the requirements of the college that he plans to attend.

### Pre-Veterinary

FIRST YEAR					
First Semester		Hours	Second Semester		Hours
1-EN 101	First Year English	3	1-EN 102	First Year English	3
1-ZO 100	General Zoology	4	1-BO 100	General Botany	4
1-CH 113	General Chemistry	4	1-CH 115	Gen. Chem. and Qual. Analysis	5
1-MA 117	College Algebra	3	1-MA 118	Trigonometry	3
1-PE 101	Freshman Phys. Ed.	0.5	1-PE 102	Freshman Phys. Ed.	0.5
1-MS 101	Basic Military Science or		1-MS 102	Basic Military Science or	
1-AS 101	Basic Air Science	1.5	1-AS 102	Basic Air Science	1.5
		16			17

SECOND YEAR					
First Semester		Hours	Second Semester		Hours
1-PH 111	General Physics	4	1-PH 112	General Physics	4
1-CH 331	General Organic Chemistry	4	1-CH 332	General Organic Chemistry	5
1-PE Activity		0.5	1-PE Activity		0.5
1-MS 201	Basic Military Science or		1-MS 202	Basic Military Science or	
1-AS 201	Basic Air Science	1.5	1-AS 202	Basic Air Science	1.5
Electives		7	Electives		6
		17			16

### Pre-Forestry

FIRST YEAR					
First Semester		Hours	Second Semester		Hours
1-EN 101	First Year English	3	1-EN 102	First Year English	3
1-BO 100	General Botany	4	1-CH 231	Elem. Organ. Chem.	4
1-MA 117	College Algebra	3	1-MA 118	Trigonometry	3
1-CH 111	Elementary Chemistry	4	1-ZO 100	General Zoology	4
1-PE 101	Freshman Phys. Ed.	0.5	1-PE 102	Freshman Phys. Ed.	0.5
1-MS 101	Basic Military Science or		1-MS 102	Basic Military Science or	
1-AS 101	Basic Air Science	1.5	1-AS 102	Basic Air Science	1.5
		16			16

SECOND YEAR					
First Semester		Hours	Second Semester		Hours
IA 103	Basic Drawing	3	CE 141	Elementary Surveying	3
1-BO 360	Plant Physiology	4	1-BO 280	Gen. Plant Pathology	4
AG 232	Soils	4	AG 246	Conservation of Ag. Resources	3
1-BO 250	Plant Anatomy	4	1-ET 200	Entomology	4
1-PE Activity		0.5	1-PE Activity		0.5
1-MS 201	Basic Military Science or		1-MS 202	Basic Military Science or	
1-AS 201	Basic Air Science	1.5	1-AS 202	Basic Air Science	1.5
		17			16

## Division of Architecture

### Purpose

The objective of this Division is to provide integrated educational programs which, with appropriate practical experience, will furnish sound bases for careers in the architectural profession or the construction industry. Programs of study are offered in architecture, building construction, and engineering construction. These programs recognize that the growing complexity of science and technology demands a close collaboration among architects, artists and engineers, building and construction contractors, material and equipment designers, producers, and distributors, and others in the diverse field of construction.

Professional and technical courses have been developed in collaboration with the local chapter of the association to which each program is related: The American Institute of Architects, Arizona Building Contractors, and Associated General Contractors. These organizations cooperate also in furnishing scholarships, awards and both summer and permanent employment opportunities.

General education courses—communications, humanities and the social sciences—are calculated to relate the professional and technical courses to the basic purpose of architecture and construction, that of creating the buildings and facilities of a functional and satisfying environment.

### Admission

Students who wish to enter the Division of Architecture as freshmen should present 15 units of secondary school work distributed as follows:

English .....	3
History or Social Studies.....	2
Algebra .....	1½
Plane Geometry.....	1
Physics .....	1
Chemistry .....	1
Other .....	5½

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15 units

Students presenting other or fewer credits may be required to take additional preparatory work without degree credit. Health or financial necessity may also extend the time for completion of prescribed programs. Part time work is encouraged providing course load is adjusted to compensate. Students credited with advanced standing on the basis of work done at other institutions may in any year undertake in part the work of more advanced

years, subject to completion of courses listed as prerequisites, or equivalents thereto.

Counseling is a continuous process; however, the student must see his adviser at least once each semester, prior to registration.

## Organization

The courses of instruction are organized into degree curriculums in architecture and construction. These are further organized into separate subject fields which are summarized as follows:

SUBJECT FIELD	CURRICULUM		
		ARCHITECTURE	CONSTRUCTION
	5 years	Building Construction 4 years	Engineering Construction 4 years
General Education (Excl. Sci. and Math.)	32	32	32
Science and Math	20	18	18
History and Theory	12	2	
Design	38		
Sketching and Rendering	8		
Drafting and Construction	11	3	3
Structures	18	12	12
Building Equipment	6	6	
Administration and Management	8	23	23
Techniques and Operations		23	29
Electives	11	11	13
<b>TOTAL HOURS (Minimum)</b>	<b>164</b>	<b>130</b>	<b>130</b>
Military or Air Science (men)	6	6	6

Specific required courses in general education are shown in the curriculum outlines for architecture and construction. Where a general education elective is permitted, it will be selected from the list required for the College of Applied Arts and Sciences.

## Bachelor of Science Degree Curriculum in Architecture

This curriculum provides an organized sequence of training in each of the several phases of architecture and architectural practice as summarized under "Organization." Satisfactory completion of the five year program leads to the degree of Bachelor of Science in Architecture. This, when supplemented by necessary experience, constitutes qualification for the examination for registration under Arizona law as administered by the State Board of Technical Registration in conformity with the recommendations of the National Council of Architectural Registration Boards.

The curriculum is so arranged as to provide both general and professional training in each year of the program. The work of all other courses is integrated in the design courses. A mark of C or better in each design course is requisite for advancement to the next. Work done in fulfillment of degree requirements becomes the property of the Division.

Because architecture is an art and a science, its demands are diverse and exacting. A certain amount of native ability is important to success. This, with diligence, can assure the student a rewarding career as an architect or in one of the creative or technical fields related to architecture.

## CURRICULUM IN ARCHITECTURE

### FIRST YEAR

First Semester	Hours	Second Semester	Hours
1-EN 101 English.....	3	1-EN 102 English.....	3
1-MA 118 Algebra and Trig.....	4	1-MA 120 Analytic Geometry and Calculus.....	4
1-HI 101 Survey of Western Civ. or		1-HI 102 Survey of Western Civ. or	
1-SS 101 Intro. to Soc. Sci.....	3	1-SS 102 Intro. to Soc. Sci.....	3
1-MS 101 Basic Military Science or		1-MS 102 Basic Military Science or	
1-AS 101 Basic Air Science.....	1.5	1-AS 102 Basic Air Science.....	1.5
1-PE 101 Freshman Phys. Ed.....	0.5	1-PE 102 Freshman Phys. Ed.....	0.5
AC 100 Intro. to Architecture.....	2	AC-150 Basic Drawing.....	3
1-AR 111 Drawing and Perspective	2	1-AR 141 Basic Design.....	2
	16		17

### SECOND YEAR

First Semester	Hours	Second Semester	Hours
1-PH 111 General Physics.....	4	1-PH 112 General Physics.....	4
1-HU 201 Intro. to the Humanities	4	1-HU 202 Intro. to the Humanities	4
1-MS 201 Basic Military Science or		1-MS 202 Basic Military Science or	
1-AS 201 Basic Air Science.....	1.5	1-AS 202 Basic Air Science.....	1.5
1-PE Activity.....	0.5	1-PE Activity.....	0.5
AC 223 Architectural Design.....	3	AC 224 Architectural Design.....	3
AC 241 Structures.....	3	AC 242 Structures.....	3
AC 241 Sketching and Rendering..	3	AC 242 Sketching and Rendering..	3
	19		19

### THIRD YEAR

First Semester	Hours	Second Semester	Hours
Elective (Gen. Educ.).....	2	Elective (Gen. Educ.).....	2
AC 325 Architectural Design.....	4	AC 326 Architectural Design.....	4
AC 363 Structures.....	3	AC 364 Structures.....	3
AC 371 Mechanical Equip. in Bldgs.	3	AC 372 Electrical Equip. in Bldgs.	3
AC 311 History of Architecture.....	3	AC 312 History of Architecture.....	3
AC 351 Drawings and Spec.....	3	AC 352 Drawings and Specs.....	3
	18		18

### FOURTH YEAR

First Semester	Hours	Second Semester	Hours
Elective (Gen. Educ.).....	3	Elective (Gen. Educ.).....	4
AC 427 Architectural Design.....	4	AC 428 Architectural Design.....	4
AC 431 Landscape Design.....	3	AC 432 Community Planning.....	3
AC 413 Theory of Arch.....	2	AC 414 Theory of Arch.....	2
CO 383 Estimating in Bldg. Const.	3	AC 480 Admin. in the Const. Indus.	3
Electives (Professional).....	2	Electives (Professional).....	2
Elective (Genl. Educ.).....	3		
	17		18

### FIFTH YEAR

First Semester	Hours	Second Semester	Hours
AC 429 Architectural Design.....	4	AC 430 Architectural Design.....	4
AC 465 Structural Design.....	3	AC 466 Structural Design.....	3
AC 481 Const. Industry Organ.....	2	AC 486 Technical Research.....	2
Electives (Professional).....	2	Electives (Professional).....	5
Elective (Genl. Educ.).....	3		
	14		14
		Total Hours.....	170

Professional electives will be selected from courses in the Department of Art and other areas of instruction, subject to prior approval of advisers.

## Bachelor of Science Degree Curriculum in Construction

The curriculum in construction has two options as summarized under "Organization." The first two years are common to each. At the beginning of his third year, the student will choose between:

- Building Construction—Construction of buildings of all types.
- Engineering Construction—Construction of roads, bridges, dams, airfields, utilities, industrial plants, etc.

Satisfactory completion of either of these two four-year programs leads to the degree of Bachelor of Science in Construction.

Because the construction industry is now the largest in the country in terms of money expended and employment provided, there are increasing opportunities for careers in contracting or in the many related fields of construction.

### CURRICULUM IN CONSTRUCTION

#### FIRST YEAR

First Semester	Hours	Second Semester	Hours
1-EN 101 English.....	3	1-EN 102 English.....	3
1-MA 117 College Algebra.....	3	1-MA 118 Trigonometry.....	3
1-HI 101 Survey of Western Civ. or		1-HI 102 Survey of Western Civ. or	
1-SS 101 Intro. to Soc. Sci.....	3	1-SS 102 Intro. to Soc. Sci.....	3
1-MS 101 Basic Military Science or		1-MS 102 Basic Military Science or	
1-AS 101 Basic Air Science.....	1.5	1-AS 102 Basic Air Science.....	1.5
1-PE 101 Freshman Phys. Ed.....	0.5	1-PE 102 Freshman Phys. Ed.....	0.5
AC 150 Basic Drawing.....	3	ME 102 Engineering Problems.....	2
CO 191 Bldg. Mat'ls and Tech.....	3	CO 192 Bldg. Mat'ls and Tech.....	3
	17		16

#### SECOND YEAR

First Semester	Hours	Second Semester	Hours
1-PH 111 General Physics.....	4	1-PH 112 General Physics.....	4
1-HU 201 Intro. to the Humanities	4	1-HU 202 Intro. to the Humanities	4
3-GB 101 Intro. to Modern Business	3	1-MS 202 Basic Military Science or	
1-MS 201 Basic Military Science or		1-AS 202 Basic Air Science.....	1.5
1-AS 201 Basic Air Science.....	1.5	1-PE Activity.....	0.5
1-PE Activity.....	0.5	3-EC 201 Principles of Economics.....	2
AC 261 Structures.....	3	AC 262 Structures.....	3
CE 241 Elementary Surveying.....	3	CO 290 Pre-plans and Methods.....	3
	19		19

#### THIRD YEAR

(Building Construction)

First Semester	Hours	Second Semester	Hours
Elective (Gen. Educ.).....	2	Elective (Gen. Educ.).....	2
AC 100 Intro. to Architecture.....	2	AC 480 Admin. in the Const. Indus.	3
3-AC 101 Elementary Accounting.....	4	3-AC 331 Cost Accounting.....	3
AC 363 Structures.....	3	AC 364 Structures.....	3
AC 371 Mech. Equipment in Bldgs.	3	AC 372 Elect. Equipment in Bldgs.	2
CO 383 Estimating in Bldg. Const.	3	Elective (Technical).....	2
	17		17

**FOURTH YEAR**

(Building Construction)

First Semester	Hours	Second Semester	Hours
Elective (Gen. Educ.).....	3	Elective (Gen. Educ.).....	4
Elective (Technical).....	3	Electives (Technical).....	5
CO 381 Construction Equipment.....	3	CO 498 Shop and Mill Production.....	3
CO 495 Org. of Const. Operations.....	3	3-GB 305 Business Law.....	3
3-MG 422 Employee Trng. & Super.....	2		
AC 481 Const. Industry Organ.....	2		
	16		15

**THIRD YEAR**

(Engineering Construction)

First Semester	Hours	Second Semester	Hours
Elective (Gen. Educ.).....	2	Elective (Gen. Educ.).....	2
Elective (Technical).....	2	AC 480 Admin. in the Const. Ind. ....	3
3-AC 101 Elementary Accounting.....	4	3-AC 331 Cost Accounting.....	3
AC 363 Structures.....	3	AC 364 Structures.....	3
CO 391 Construction Equip.....	3	CO 392 Construction Equip.....	3
Elective (Technical).....	3	CO 388 Estimating in Engr. Const. ....	3
	17		17

**FOURTH YEAR**

(Engineering Construction)

First Semester	Hours	Second Semester	Hours
Elective (Gen. Educ.).....	3	Elective (Gen. Educ.).....	4
Electives (Technical).....	6	Electives (Technical).....	2
1-GL 347 Engineering Geology.....	3	CO 498 Hydraulics & Soil Mechanics.....	3
3-MG 422 Employee Trng. & Super.....	2	CO 496 Org. of Const. Operations.....	3
AC 481 Const. Industry Organ.....	2	3-GB 305 Business Law.....	3
	16		15
		Total Hours.....	136

*Suggested Technical Electives:*

3-MG 311 Personnel Administration.....	3	1-GL 347 Engineering Geology.....	3
3-MG 301 Bus. Org. & Management.....	3	AC 351 Drawings and Specs.....	3
3-FI 225 Business Finance.....	3	AC 352 Drawings and Specs.....	3
3-GB 233 Business Communication.....	3	All CO courses	
CE 242 Surveying.....	3		
Foreign Language.....	8		

## Special Programs

### Architecture and Construction

Students may, with the aid of advisers, plan programs of less than degree length and content. Admission to selected specific courses is subject to completion of listed prerequisites or equivalents thereto.

## Division of Engineering

### Purpose

The Engineering Program seeks the attainment by each graduate of certain broad objectives, and it is designed to make effective a philosophy of education for careers in science, engineering, and industry for leadership in the second half of the twentieth century.

The curriculums and courses offered are designed to meet the needs of the following students: (1) Those who wish to obtain a Bachelor of Science degree in engineering and who plan careers

in fields where science, mathematics, and analytical methods are of special value; (2) Those who wish to do graduate work in engineering; (3) Those who wish one or two years of training in mathematics, science, and engineering in preparation for a technical program; (4) Those who desire pre-engineering for the purpose of deciding which engineering field to undertake or those who desire to transfer to another college or university; (5) Those who wish to take certain electives in these fields while pursuing another curriculum in the College.

## Admission

Students who wish to be admitted to the Division of Engineering as freshmen should present 15 units of secondary school work distributed as follows:

English .....	3 units
History or Social Studies.....	2 units
Physics .....	1 unit
Algebra .....	2 units
Plane Geometry.....	1 unit
Trigonometry .....	$\frac{1}{2}$ unit
Additional work in any of above subjects.....	$3\frac{1}{2}$ units
Other High School Subjects.....	2 units
(Chemistry Recommended).	

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15 units

A student presenting other or fewer credits than those listed above may be requested to take additional preparatory work without degree credit. Well prepared students can usually complete the plan of study leading to the degree of Bachelor of Science in Engineering in any of the engineering curricula in four years. Many students however, may find it advantageous or necessary to devote more than four years to the undergraduate engineering programs of study by pursuing at one time, in any semester, fewer studies than are regularly prescribed. In cases of inadequate secondary preparation, poor health, or financial necessity requiring much time for outside work, the undergraduate course should be extended to five years or longer. A student who so desires may devote five years to his undergraduate work and include additional instruction in the humanities, the social sciences, the physical sciences or mathematics.

## Organization

The fields of specialization which have been developed around an engineering science core are shown below:

Chemical Engineering  
Civil Engineering  
Computer Engineering

Electrical Engineering  
 Engineering Science  
 Industrial Engineering  
 Mechanical Engineering  
 Nuclear Engineering

Since all of the instructional patterns are basically variations of a single curriculum, the student is allowed considerable latitude in developing an instructional pattern to fit his particular interests.

## Bachelor of Science Degree Curriculum in Engineering

The satisfactory completion of a four-year curriculum of a minimum of 134 semester hours, including general education, an engineering core curriculum, and both required and elective courses of study in a field of specialization, leads to the degree of Bachelor of Science in Engineering.

The principle fields of specialization in the engineering curriculum are devoted to the basic sciences, mathematics, the fundamentals of engineering science, and their application to the solution of engineering problems. These courses are not training courses for any of the mechanical or manipulative skills, but rather, are planned to provide preparation for development, design, research, graduate work, and, with certain electives, for operation, production, testing, maintenance, and management.

In any field of specialization the degree requirements are apportioned approximately as follows:

The Engineering Core.....	62 Sem. Hrs.
General Education Requirements.....	32 Sem. Hrs.
Required and elective courses in a field of specialization .....	40 Sem. Hrs.
	134 Sem. Hrs.
AFROTC and ROTC (required of all male students unless exempt).....	6 Sem. Hrs.
	Total 140 Sem. Hrs.

For assistance and counsel in planning a program, a student will be assigned an adviser from the instructional staff in his special interest field.

### ENGINEERING CORE COURSES

1-CH 113 General Chemistry.....	4
1-CH 114 General Chemistry.....	4
or 1-CH 115 General Chemistry and Qualitative Analysis.....	5



EE 200 Introduction to Electrical Engineering .....	3
or EE 305 AC and DC Electricity 4	
ES 211 Engineering Mechanics.....	3
ES 312 Engineering Mechanics.....	3
ES 321 Mechanics of Solids.....	4
ES 371 Fluid Mechanics.....	3
or EE 311 Industrial Electronics 3	
ES 381 Thermodynamics .....	3
ES 400 Technical Writing.....	3
*1-MA 120 Analytical Geometry and Calculus .....	4
1-MA 121 Analytical Geometry and Calculus .....	4
1-MA 212 Analytic Geometry and Calculus .....	4
1-MA 220 Differential Equations.....	3
ME 102 Engineering Problems.....	2
ME 111 Engineering Drawing.....	2
ME 112 Descriptive Geometry.....	2
ME 251 Mechanical and Industrial Processes .....	2
or ME 252 Manufacturing Design and Operations .....	3
or 1-MA 104 Information, Automation and Civilization .....	3
or KE 211 Chemical Process Calculations .....	3
1-PH 211 Engineering Physics.....	5
1-PH 212 Engineering Physics.....	4

—  
Total 62 Sem. Hrs.

\*Students without sufficient preparatory mathematics will precede 1-MA 120 with 1-MA 117 and 1-MA 118 or 1-MA 119. These courses will carry regular college credit, but they may not be applied toward an engineering degree.

The program of study in the first year precedes, and is common to, all fields of specialization. It gives the student time to become adjusted, and to choose the field of specialization for which he is best adapted. Counseling is provided in order that the student may be aided in making his choice. To a considerable extent, the course requirements of the second year are common to all fields of specialization.

Prior to enrolling in courses at the 300 level, each engineering student must: (1) receive approval from the office of the Dean of Engineering to continue in engineering; (2) secure from his adviser an approved course of study for his remaining work. Generally, students with a 2.00 scholarship index, (C average) or higher will receive approval.

As an aid to student program planning, two freshmen programs of study are shown below. The first is suggested for those students who are well prepared scholastically and who are not lacking in entrance requirements. The alternate program of study is suggested for those students with insufficient preparatory mathematics.

## FIRST YEAR ENGINEERING

(Common to all engineering programs)

### REGULAR SCHEDULE

First Semester		Hours	Second Semester		Hours
1-EN 101	First Year English	3	1-EN 102	First Year English	3
1-CH 113	General Chemistry	4	*1-CH 114	General Chemistry	4
ME 111	Engineering Drawing	2	ME 112	Descriptive Geometry	2
1-MA 120	Anal. Geom. & Calculus	4	1-MA 121	Ana. Geo. and Calculus	4
3-GB 101	Intro. to Modern Bus.	3	ME 102	Engineering Problems	2
1-PE 101	Freshman Phys. Ed.	0.5	1-PE 102	Freshman Phys. Ed.	0.5
1-MS 101	Basic Military Science or		1-MS 102	Basic Military Science or	
1-AS 101	Basic Air Science	1.5	1-AS 102	Basic Air Science	1.5
18			17		

\*Students following chemical engineering and nuclear engineering will take 1-CH 115 here.

## FIRST YEAR ENGINEERING

### ALTERNATE SCHEDULE

(For students with insufficient preparatory mathematics)

First Semester		Hours	Second Semester		Hours
1-EN 101	First Year English	3	1-EN 102	First Year English	3
1-CH 113	General Chemistry	4	1-CH 114	General Chemistry	4
ME 111	Engineering Drawing	2	ME 112	Descriptive Geometry	2
*1-MA 117	College Algebra	3	1-MA 120	Anal. Geo. & Calculus	4
*1-MA 118	Trigonometry	3	ME 102	Engineering Problems	2
1-PE 102	Freshman Phys. Ed.	0.5	1-PE 102	Freshman Phys. Ed.	0.5
1-MS 101	Basic Military Science or		1-MS 102	Basic Military Science or	
1-AS 101	Basic Air Science	1.5	1-AS 102	Basic Air Science	1.5
17			17		

\*This course carries regular college credit but it cannot be applied toward an engineering degree.

All engineering students will complete the general education and engineering core courses shown above. In addition to these subjects, there are approximately 40 hours of required and elective courses which are necessary to complete the degree requirements in each field of specialization. For convenience, these are listed below.

Each program of study includes several hours of technical electives. With the consent of the student's faculty adviser, selection of elective courses may be made from 300 level courses or above in engineering, mathematics, business administration, or the physical sciences.

## CHEMICAL ENGINEERING

The work of the chemical engineer is concerned with the design, construction, and operation of equipment and plants, research, and processes whereby materials undergo a chemical and physical change. Chemistry, physics, and mathematics are the underlying sciences of chemical engineering, and economics is the guide post.

KE 421 Chemical Engineering.....	3
KE 422 Chemical Engineering.....	3
KE 441 Chemical Processes.....	3
1-CH 225 Quantitative Analysis.....	4
1-CH 331 General Organic Chemistry.....	4
1-CH 332 General Organic Chemistry.....	4
1-CH 441 General Physical Chemistry.....	4
1-CH 442 General Physical Chemistry.....	4
Technical Electives.....	9

### CIVIL ENGINEERING

Civil engineering as a profession embraces the following: surveying; water supply; sewerage; the planning design, and construction of buildings, bridges, reservoirs, canals, and foundations; planning, design, construction, and maintenance of roads and highways; administration of city business; and technical service of various kinds for industries.

CE 241 Surveying .....	3
CE 242 Surveying .....	3
CE 318 Engineering Construction.....	3
CE 339 Structural Engineering.....	3
CE 351 Soil Mechanics and Foundations.....	3
CE 421 Structural Design.....	3
CE 422 Structural Analysis.....	3
CE 423 Concrete Design.....	3
GL 347 Engineering Geology.....	3
Technical Electives.....	12

### COMPUTER ENGINEERING

Computer engineers are involved in the technological aspects of such areas as design, application, construction, control, and automation. Computers are a basis for increasing man's ability to use tools and augmenting his ability to do mental work. Computers are not substitutes for engineers; but rather they help correlate and organize scientific information, and therefore introduce a larger number of permutations and possibilities for the engineer to apply.

#### (Design of Computers)

GE 316 Programming .....	3
GE 401 Computing Techniques.....	3
1-MA 225 Numerical Analysis.....	3
EE 305 AC and DC Electricity .....	4
EE 315 Electronic Engineering.....	4
EE 316 Electronic Engineering.....	4
EE 325 Vacuum Tubes and Semiconductors.....	4
EE 326 Electrical and Electronic Measurements.....	4
EE 459 Circuit Anal. and Syn. ....	3
Technical Electives.....	7

**(Applications of Computers)**

GE 316 Programming .....	3
GE 401 Computing Techniques.....	3
1-MA 225 Numerical Analysis.....	3
EE 315 Electronic Engineering.....	4
EE 316 Electronic Engineering.....	4
ES 382 Thermodynamics .....	2
ES 421 Vibrations .....	3
ES 483 Heat Transfer.....	3
Technical Electives.....	14

**ELECTRICAL ENGINEERING**

Practically all modern scientific developments are either essentially electrical in character or depend on electronic equipment and technique. The field is very broad since it enters into every form of industry and service where power is utilized, intelligence is transmitted, and control is exercised over physical, chemical, or mechanical operations.

EE 303 Direct Current Electricity.....	3
EE 304 Alternating Current Electricity.....	3
EE 315 Electronic Engineering.....	4
EE 316 Electronic Engineering.....	4
EE 325 Vacuum Tubes and Semiconductors.....	4
EE 326 Electrical and Electronic Measurements.....	4
Technical Electives.....	15

**ENGINEERING SCIENCE**

Engineering science is designed to produce a new kind of graduate who knows the basic sciences and the important engineering sciences, and understands how to apply them to a rather broad but fundamental field of engineering activity. It leads to analytical engineering, to development, reasearch, and to graduate work in many areas. Laboratory work will emphasize measurements and instrumentation, experimental techniques, and engineering equipment. The graduate of this curriculum will be expected to be able to avail himself of the facts of basic science and engineering science in the solution of engineering problems — using mathematics and the research method as tools.

ES 351 Metallurgy .....	3
ES 382 Thermodynamics .....	2
ES 421 Vibrations .....	3
ES 461 Numerical Analysis.....	3
ES 471 Engineering Research and Design.....	3
ES 472 Engineering Research and Design.....	3
ES 483 Heat Transfer.....	3
EE 315 Electronic Engineering.....	4
EE 316 Electronic Engineering.....	4
Technical Electives.....	12

**INDUSTRIAL ENGINEERING**

Industry is in need of men who have a technical background which gives them an understanding of the nature of technological forces and who have, in addition, a knowledge of the details of organizing and operating an enterprise, and who are cognizant of the human elements involved.

Industrial engineering includes a study of basic engineering subjects, the principles of organizing and operating an industrial enterprise, and the principles of efficient methods of production and of handling personnel.

IE 321 Methods and Motion Study.....	3
IE 431 Engineering Administration.....	3
IE 461 Factory Planning.....	3
IE 491 Operations Research.....	3
ME 252 Manufacturing Design and Operations.....	3
ME 481 Machine Design.....	3
EE 311 Industrial Electronics.....	3
AC 101 Accounting .....	4
AC 331 Cost Accounting.....	3
MG 311 Principles of Management.....	3
Technical Electives.....	8

**MECHANICAL ENGINEERING**

The breadth of the field of mechanical engineering is such that specialization in undergraduate work is undesirable, possibly impossible. Mechanical engineers are used for such a variety of work that the curriculum is broad and fundamental. The work of mechanical engineers falls under design, construction, erection, operation, inspection, production, maintenance, research, sales, and administration.

ME 252 Manufacturing Design and Operations.....	3
ME 311 Mechanisms .....	2
ME 461 Engineering Laboratory.....	3
ME 462 Engineering Laboratory.....	3
ME 481 Machine Design.....	3
ME 482 Machine Design.....	3
ES 351 Metallurgy .....	3
ES 382 Thermodynamics .....	2
ES 483 Heat Transfer.....	3
EE 311 Industrial Electronics.....	3
Technical Electives.....	11

**NUCLEAR ENGINEERING**

Energy from the atomic nucleus will revolutionize man's concepts of power and energy utilization within the foreseeable future. Applications of nuclear reaction products will expand to all branches of engineering and technology. The need for engineers specifically trained to cope with the problems of nuclear engineer-

ing, nuclear processes and their applications to industry and living is now large and will increase. Well informed specialists in the field believe that the rate of advancement of nuclear applications is wholly dependent on the number of well qualified engineers available.

NE 411 Nuclear Engineering.....	3
NE 431 Nuclear Reactor Theory.....	3
1-PH 461 Atomic Physics.....	3
1-PH 462 Nuclear Physics.....	3
ES 351 Metallurgy .....	3
ES 382 Thermodynamics .....	2
ES 471 Engineering Research and Design.....	3
ES 472 Engineering Research and Design.....	3
ES 483 Heat Transfer.....	3
EE 315 Electronic Engineering.....	4
Technical Electives.....	9

## Division of Technology

### Purpose

The Division of Technology serves several major functions. Important among these functions is the offering of technical and professional courses for those planning to become teachers of industrial arts education in the elementary, and secondary schools.

For in-service teachers of Industrial Arts Education a comprehensive graduate course offering, leading to the Master of Arts degree, is available.

A parallel function of the division is the offering of four year degree curriculums with opportunity for field specialization in one of the following: Aeronautics, Technical Design, Electronics, General Industrial, and Mechanics. Additionally, the Division offers service courses in the form of shop and laboratory courses for specializations in building construction and engineering construction curriculums, which are offered by the Division of Architecture.

Students who do not wish to pursue a four year degree program, but who desire to secure specialized preparation at the college level in industrial activities, may choose a two year curriculum from one of the several field specializations noted above.

### Organization

The courses of instruction offered by the Division of Technology are organized under the following subject fields: industrial arts education, aeronautics, construction, technical design, electronics, and mechanics.

While many division courses are designated as Industrial Arts courses, they are in certain instances also elective to students of the various field specializations of the four year non-teaching curriculums. Conversely, the Industrial Arts students, to some extent, build their concentrations of technical work in courses of the above listed fields of specialization.

## Industrial Arts Education

The total pattern of course work required of the prospective secondary school industrial arts teacher is as follows:

General Education.....	43 hours
Professional Education.....	22 hours
Major teaching field.....	45 hours
Minor teaching field.....	15 hours
School Community Health.....	3 hours
Air or Military Science.....	6 hours

For the specific requirements of general and professional education, consult the catalog section of the College of Education.

### MAJOR TEACHING FIELD

The major teaching field in industrial arts requires 45 hours of which 25 hours are required shop courses, 12 hours are elected in a field of specialization, and 8 hours are required in professional industrial arts courses.

The required shop core is as follows:

TE 110—Elementary Electricity.....	3 hours
IA 103 or ME 111—Drawing.....	2 hours
AC 150—Basic Drawing.....	3 hours
Mechanics; <i>Elect 6 hours from following courses</i> .....	6 hours
TM 161—Machine Shop.....	3 hours
TM 164—Sheet Metal Work.....	3 hours
TM 169—Welding .....	3 hours
TM 274—Basic Automotives .....	3 hours

Woods and Construction:

<i>Elect 6 from following courses</i> .....	6 hours
IA 121—Intro. to Woodworking.....	3 hours
IA 125—Wood Turning.....	3 hours
IA 222—Cabinet Making.....	3 hours
IA 227—Finishing Materials & Techniques	3 hours
CO 494—Techniques of Construction.....	3 hours
IA 135—Basic Graphic Arts.....	3 hours
IA 161—General Shop.....	2 hours

Total 25 hours

The industrial arts professional course requirement of 8 hours is outlined below:

IA 109 Calculations .....	2 hours
IA 342 Selection and Organization of Subject Matter	3 hours
IA 480 Methods of Teaching Industrial Arts.....	3 hours
	—
	8 hours

It is recommended that the 6 graduate hours necessary for a pre-secondary certificate be:

IA 442g Shop Planning and Equipment.....	3 hours
IA 444g Modern Industries.....	3 hours
	—
	6 hours

Twelve hours are to be elected, with approval of the adviser, from a field of specialization.

#### MINOR TEACHING FIELD

Fifteen semester hours of work are required including IA 342 and 480. The remaining 10 hours are to be chosen with the aid of adviser from the shop core required of industrial arts majors.

## Bachelor of Science Degree Curriculum in Technology

Curriculums in technology are four year degree programs with a significant portion of the college work being completed in an area of technical specialization. These areas include aeronautics, technical design, electronics, general industrial, and mechanics. Specialization in one of these areas is designed to afford the student an excellent preparation in the techniques, skills and processes essential to entering industrial, technical and commercial occupations.

All four-year technological curriculums of this Division require the satisfactory completion of a *minimum* of 126 hours, divided into five requirements as follows:

I General Education.....	46 hours
II Air or Military Science.....	6 hours
III Technological Core Courses.....	12 hours
IV Field of Specialization—(Courses required and elected) .....	46 to 55 hours
V Supporting Field.....	12 hours

A minimum of 20 semester hours taken in the major field of specialization must be in upper division courses.

All technological curriculums require the following courses:

*1-MA 116 or 117 Algebra.....	3
*1-MA 118 Trigonometry.....	3



IA 109 Calculations.....	2
*1-PH 111 General Physics.....	4
1-PH 112 General Physics.....	4
*1-CH 111 or 113 Elem. Chemistry.....	4
2-GB 305 Business Law.....	3
*2-GB 101 Intro. to Modern Business.....	3
ES 400 Technical Writing.....	3
	29

Of these 29 hours the starred 17 hours are general education requirements; the remaining 12 hours comprise the technological core courses (Item III above).

Beyond the above core, the specific requirements of each of the fields of specialization are set forth in the following section.

**Field of Specialization Requirements**

A field of specialization consists both of required and elective courses within the selected field of emphasis.

*Aeronautics.* Attempt is made to develop insight and understanding of aeronautics through a combination of theory and practice. Technical aspects of meteorology, radio, navigation, aerodynamics and aircraft mechanics are studied, as well as the proper use of navigational aids, weather aids, and training facilities provided by the government.

Required Courses: TA 180, 183, 186, 287, 288, 380, 381, 384; IA 103 or ME 111; TM 161, 164, 169; CE 241, 471.

Electives: CO 293; AC 261; IA 486, 487, 489.

Supporting Field: TE 110, 210, 310, 315, or suitable courses chosen with the approval of an adviser.

*Electronics.* This field of specialization provides theoretical, practical and technical knowledge of electronics and allied fields. It prepares for employment in commercial broadcasting and television station operation, maintenance, and repair; radar and other military applications of electronics; industrial applications of electronics as well as commercial activities associated with the field.

Required Courses: TE 110, 215, 216, 310, 311, 313, 317, 412, 414, 417; 1-MA 120.

Technical Electives: Select 16 hours from the following: ME 112; IA 121; TE 210, 315, 319, 410, 418; 1-MA 121, 221.

Note: A minimum of 5 hours of the 16 selected must be upper division courses.

Supporting Field: TM 161, 164, 169; IA 103 or ME 111, or suitable courses chosen with the approval of an adviser.

*General Industrial.* Curriculum provides experiences designed to permit a degree of specialization, but with emphasis upon broad

preparation in industrial areas. Designed to meet the needs of those desiring to become inspectors, managers, salesmen, supervisors, shop owners or associated employment goals.

Required Courses: TM 161, 164, 169; IA 103, 121, 222, 227; TE 110.

Elective Courses: Select a minimum of 15 semester hours from one of the five special emphases. A minimum of 20 additional hours must be selected from courses offered by the division with approval of adviser.

Emphasis on Aeronautics: TA 180, 183, 186, 287, 288, 380, 381, 384, 488; TE 210.

Emphasis on Technical Design: TD 101, 202, 203, 305, 402, 404, 406, 408; ME 111, 112, 251, 252; CE 241; TE 215; AC 261, 262.

Emphasis on Construction: CO 191, 193, 494, 495; AC 150, 261.

Emphasis on Electronics: TE 210, 215, 216, 310, 311, 313, 315, 317, 410, 412, 414, 417, 418; TD 305.

Emphasis on Mechanics: TM 162, 164, 169, 173, 267, 274, 276, 364, 369, 371, 377, 461, 462, 469, 478; TD 101; TE 319.

*Mechanics.* Designed to meet the needs of students desiring to enter employment in technical and related positions in metals and allied industries including the several phases of automotives.

Required Courses: TM 161, 162, 164, 173, 267, 274, 276, 364, 369, 371, 377, 461, 462, 469, 478; TE 169; IA 103 or ME 111.

Electives: IA 361, 442, 444, and TE 215.

Supporting Field: TE 110, 319; TD 101; IA 323; ME 112, or suitable courses chosen with the approval of the adviser.

*Technical Design.* Instructional experiences designed to impart proficient drafting technique, scientific background, knowledge of industrial and commercial materials and manufacturing processes. Program emphasis is upon design so as to permit students to perform successfully at the drafting design level of employment.

Required Courses: TD 101, 202, 203, 305, 402, 404, 406, 408; AC 261, 262; TE 110, 215; ME 111, 112, 251, 252.

Electives: IA 401; AC 150; TE 216.

Supporting Field: CE 241; TM 164, 169; 1-MA 120, or suitable courses chosen with the approval of an adviser.

### Special Students and Two-Year Technical Curriculums

Students not desiring to pursue a four year degree program, but who wish to secure specialized preparation at the college level in industrial activities may do so. Special students are those who are not enrolled in any curriculum leading to a degree but who desire instruction in subjects of special interest to themselves.

Moreover, a student may choose one of the two year curriculums from a field of specialization. Specific courses included in the student program must have the approval of adviser.

SUGGESTED BACHELOR OF SCIENCE DEGREE  
PROGRAM — AERONAUTICS

FIRST YEAR

First Semester		Hours	Second Semester		Hours
#1-EN 101 First Year English	3		#1-EN 102 First Year English	3	
#MA 116 or 117 Algebra	3		#1-MA 118 Trigonometry	3	
IA 103 or ME 111 Drawing	2		TM 164 Sheet Metal	3	
TM 169 Welding	2		TA 186 Aircraft Woodwork	2	
TE 110 Elem. Electricity	3		TA 183 Theory of Flight	3	
1-PE 101 Freshman Phys. Ed.	0.5		1-PE 102 Freshman Phys. Ed.	0.5	
1-MS 101 Basic Military Science or			1-MS 102 Basic Military Science or		
1-AS 101 Basic Air Science	1.5		1-AS 102 Basic Air Science	1.5	
		16			16

SECOND YEAR

First Semester		Hours	Second Semester		Hours
#1-PH 111 General Physics	4		1-PH 112 General Physics	4	
IA 109 Calculations	2		TM 161 Machine Shop	3	
#1-CH 111 Elem. Chemistry	4		TA 288 Aircraft Mechanics	3	
TA 180 Aircraft Covering	2		TE 315 Aircraft Radio	3	
CE 241 Elementary Surveying	3		#1-HE 100 Hygiene	2	
1-PE Activity	0.5		1-PE Activity	0.5	
1-MS 201 Basic Military Science or			1-MS 202 Basic Military Science or		
1-AS 201 Basic Air Science	1.5		1-AS 202 Basic Air Science	1.5	
		17			17

THIRD YEAR

First Semester		Hours	Second Semester		Hours
#Humanities Elective	4		#1-HI 102 or 104 History	3	
GL 113 Physical Geology	4		#Humanities Elective	3	
#AC 100 Intro. to Architecture	2		TA 287 Aircraft Engines	3	
#1-HI 101 or 103 History	3		TA 381 Sec. Ground School	8	
TA 380 Primary Ground School	4				
		17			17

FOURTH YEAR

First Semester		Hours	Second Semester		Hours
ES 400 Technical Writing	3		#2-GB 101 Intro. Mod. Bus.	3	
2-GB 305 Business Law	3		#1-SE 200 Elements of Speech	2	
TA 384 Civil Air Regulations	3		TE 310 Direct Current Cir.	3	
#1-PY 100 Psychology	3		CE 471 Geodesy and Photogram.	3	
IA 488 Celestial Navigation	3		Aeronautics Elective	6	
TE 210 Radio Code	2				
		17			17

#Indicates General Education Courses  
Total — 135 hours.

SUGGESTED BACHELOR OF SCIENCE DEGREE  
PROGRAM — ELECTRONICS

FIRST YEAR

First Semester		Hours	Second Semester		Hours
#1-EN 101 First Year English	3		#1-EN 102 First Year English	3	
#1-MA 116 or 117 Algebra	3		1-MA 120 Analytic Geometry	4	
#1-MA 118 Trigonometry	3		IA 109 Calculations	2	
IA 103 or ME 111 Drawing	2		TM 164 Sheet Metal	3	
#1-HI 101 or 103 History	3		#1-HI 102 or 104 History	3	
1-PE 101 Freshman Phys. Ed.	0.5		1-PE 102 Freshman Phys. Ed.	0.5	
1-MS 101 Basic Military Science or			1-MS 102 Basic Military Science or		
1-AS 101 Basic Air Science	1.5		1-AS 102 Basic Air Science	1.5	
		16			17

## SECOND YEAR

First Semester		Second Semester	
	Hours		Hours
#1-PH 111 General Physics	4	1-PH 112 General Physics	4
#1-CH 111 or 113 Elem. Chem.	4	TE 110 Elem. Electricity	3
Technical Elective	3	TM 161 Machine Shop	3
TM 169 Welding	3	#1-PY 100 Psychology	3
1-PE Activity	0.5	Technical Elective	2
1-MS 201 Basic Military Science or		1-PE Activity	0.5
1-AS 201 Basic Air Science	1.5	1-MS 202 Basic Military Science or	
		1-AS 202 Basic Air Science	1.5
	16		17

## THIRD YEAR

First Semester		Second Semester	
	Hours		Hours
#1-SE 200 Elements of Speech	2	#2-GB 101 Intro. Mod. Bus.	3
#Humanities Electives	6	#1-HE 100 Hygiene	2
TE 215 Fundamentals of Electronics	3	TE 216 Fund. of Electronics	3
TE 313 Vacuum Tubes & Trans.	3	TE 311 Alternating Current Circuits	3
TE 310 Direct Current Circuits	3	TE 317 Electronic Measure.	3
	17	#Humanities	3

## FOURTH YEAR

First Semester		Second Semester	
	Hours		Hours
ES 400 Tech. Writing	3	TE 412 Elem. Microwaves	3
2-GB 305 Business Law	3	Technical Electives	8
TE 417 Intro. Circuit Anal.	3	#Biological Sci. Elective	4
TE 414 Elem. Television	3		
Technical Elective	3		
	15		15

#Indicates General Education Courses  
Total -- 131 hours.

## SUGGESTED BACHELOR OF SCIENCE DEGREE PROGRAM — MECHANICS

## FIRST YEAR

First Semester		Second Semester	
	Hours		Hours
#1-EN 101 First Year English	3	#1-EN 102 First Year English	3
#1-MA 116 Algebra	3	#1-MA 118 Trigonometry	3
#1-HI 101 or 103 History	3	#1-HI 102 or 104 History	3
IA 103 or ME 111 Drawing	2	TM 162 Machine Shop	3
TM 161 Machine Shop	3	TE 110 Elem. Electricity	3
1-PE 101 Freshman Phys. Ed.	0.5	1-PE 102 Freshman Phys. Ed.	0.5
1-MS 101 Basic Military Science or		1-MS 102 Basic Military Science or	
1-AS 101 Basic Air Science	1.5	1-AS 102 Basic Air Science	1.5
	16		17

## SECOND YEAR

First Semester		Second Semester	
	Hours		Hours
#1-PH 111 General Physics	4	1-PH 112 General Physics	4
IA 109 Calculations	2	#AC 100 Intro. to Architect.	2
#Humanities Elective	3	TE 319 House and Indust. Wiring	3
TM 169 Welding	3	TM 164 Sheet Metal	3
TM 173 Auto. Elect. Equip.	3	1-PE Activity	0.5
1-PE Activity	0.5	1-MS 202 Basic Military Science or	
1-MS 201 Basic Military Science or		1-AS 202 Basic Air Science	1.5
1-AS 201 Basic Air Science	1.5		
	17		17

## THIRD YEAR

First Semester		Second Semester	
	Hours		Hours
#1-SE 200 Elements of Speech	2	2-GB 101 Intro. Mod. Business	3
#Biological Science Elective	4	TD 101 Eng. Prod. Lang.	3
#1-CH 111 Elementary Chemistry	4	TM 364 Sheet Metal	3
TM 276 Diesel Engines	3	TM 377 Auto Machine Work	3
#1-HE 100 Hygiene	2	#Humanities Elective	2
	15	#1-PY 100 Psychology	3

**FOURTH YEAR**

First Semester	Hours	Second Semester	Hours
ES 400 Technical Writing.....	3	Technical Elective.....	3
TM 267 Jigs and Fixtures.....	3	2-GB 305 Business Law.....	3
TM 461 Machine Shop.....	3	TM 478 Auto Testing and Tuning	3
TM 369 Elect. Arc Welding.....	3	TM 462 Machine Shop.....	3
Technical Elective.....	2	TM 468 Advanced Welding.....	3
TM 371 Auto Body Repair.....	3		
	17		15

#Indicates General Education Courses  
Total — 132 hours.

**SUGGESTED BACHELOR OF SCIENCE DEGREE  
PROGRAM — TECHNICAL DESIGN**

**FIRST YEAR**

First Semester	Hours	Second Semester	Hours
#1-EN 101 First Year English.....	3	#1-EN 102 First Year English.....	3
#1-MA 117 Algebra.....	3	#1-MA 118 Trigonometry.....	3
#1-CH 111 or 113 Chemistry.....	4	TM 164 Sheet Metal.....	3
#Humanities Elective.....	2	TD 101 Eng. Prod. Lang.....	2
ME 111 Engineering Drawing.....	2	ME 112 Descrip. Geometry.....	2
1-PE 101 Freshman Phys. Ed.....	0.5	1-PE 102 Freshman Phys. Ed.....	0.5
1-MS 101 Basic Military Science or		1-MS 102 Basic Military Science or	
1-AS 101 Basic Air Science.....	1.5	1-AS 102 Basic Air Science.....	1.5
	16		15

**SECOND YEAR**

First Semester	Hours	Second Semester	Hours
#1-PH 111 General Physics.....	4	1-PH 112 General Physics.....	4
IA 109 Calculations.....	2	1-CE 241 Elem. Surveying.....	3
1-MA 120 Analytic Geometry.....	4	TD 203 Adv. Descrip. Geom.....	3
ME 251 Mechanical Processes.....	2	ME 252 Manufacturing Proc.....	2
TD 202 Adv. Engineering Draw.....	3	TE 110 Elem. Electricity.....	3
1-PE Activity.....	0.5	1-PE Activity.....	0.5
1-MS 201 Basic Military Science or		1-MS 202 Basic Military Science or	
1-AS 201 Basic Air Science.....	1.5	1-AS 202 Basic Air Science.....	1.5
	17		17

**THIRD YEAR**

First Semester	Hours	Second Semester	Hours
2-AC 101 Elem. Accounting.....	4	#2-GB 101 Intro. Mod. Business.....	3
2-AC 261 Structures.....	3	#1-HE 100 Hygiene.....	2
TD 305 Machine Drawing.....	3	#Humanities Elective.....	2
TM 169 Welding.....	3	#1-PY 100 Psychology.....	3
TE 215 Fundamentals of Elec- tronics.....	3	#1-HI 101 or 103 History.....	3
	16	AC 262 Structures.....	3
	16		16

**FOURTH YEAR**

First Semester	Hours	Second Semester	Hours
ES 400 Technical Writing.....	3	#Biological Sci. Elective.....	4
2-GB 305 Business Law.....	3	Technical Elective.....	3
#Humanities Elective.....	4	#1-HI 102 or 104 History.....	3
#1-SE 200 Elements of Speech.....	2	TD 406 Elem. Machine Design.....	4
TD 403 Structural Drafting.....	3	TD 408 Nomographics.....	2
TD 404 Electronic Drafting.....	2		
	17		16

#Indicates General Education Courses  
Total — 130 hours.

# Graduate Division

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Programs for Graduate Study are offered at Arizona State College by the various colleges through the Graduate Division under the direction of the Director of Graduate Study and the Graduate Council. The Graduate Council is responsible for the development and formulations of general policies and for the approval of procedures essential to the organization and administration of the graduate programs. The Director of Graduate Study is directly responsible for the administration of its policies and programs.

## Purpose

The graduate program has for its primary purpose the offering of advanced training to competent students in those fields in which Arizona State College has adequate staff and facilities. Programs will be added from time to time when it seems feasible.

## Degree Programs Offered

At present the following degree programs are offered:

1. Master of Arts:
  - a. English
  - b. History
  - c. Mathematics
  - d. Psychology
  - e. Spanish
2. Master of Science:
  - a. Accounting
  - b. Biological Science
  - c. Business Administration
  - d. Chemistry
  - e. Physics
3. Master of Arts in Education
4. Educational Specialist
5. Doctor of Education

## Enrollment in the Graduate Division

A student who has received the bachelor's degree from an approved college or university, may be admitted to the Graduate Division at Arizona State College upon filing with the Director of Graduate Study an application for admission.

A graduate student who is not a candidate for a higher degree is not required to select a field of specialization, but may, with the approval of the Director of Graduate Study, select work for his special purpose from the courses for which he has the requisite preparation. Should such a student subsequently desire to become

a candidate for a degree, only that part of the work already done will be accepted, which in the judgment of the adviser or advisory committee, properly belongs to the approved program. The students will be required to complete whatever work is necessary for fulfilling the requirements for the degree. *In no case, however, will more than six semester hours of graduate work completed before admission to the degree program be accepted towards a Master's Degree.*

### Master's Degree Program

*Admission to the Master's Degree Programs.* Students who seek admission to the Master's Degree Programs shall file with the Director of Graduate Study an application for admission and transcripts of all college work completed. The field of specialization selected shall be designated on the application.

The applicant must have an acceptable undergraduate record. Those who do not have an acceptable record, will be able to qualify by taking the aptitude test of the Graduate Record Examination.

Since graduate work in a field pre-supposes adequate training in this field at the undergraduate level, applicants are required to meet departmental or college requirements in this respect. (See Graduate Bulletin for these requirements).

### Program of Study for the Master's Degree

The Master of Arts and the Master of Science Degrees will be conferred upon those who complete successfully a program of advanced study and research in a special field. This special field, if advisable, may be supplemented by study in a supporting field.

*Credit Requirements.* A minimum of thirty semester hours of course work, including the thesis, is required. A minimum of twenty semester hours must be taken in the major field. Ten semester hours may be taken in a supporting field.

*Advisers.* An adviser is appointed by the Director of Graduate Study upon recommendation of the Department head or Dean of the College in which the student plans to study. Two committee members to serve with the adviser are appointed by the Director of Graduate Study upon recommendation of the adviser. The adviser shall direct the student's thesis study and the committee shall serve as an advisory committee and as an examining committee.

*Residence Requirements.* Two semesters of residence involving completion of a minimum of twenty semester hours of graduate credit are required. One ten-week summer session is equivalent to a semester residence.

*Language Requirements.* Optional with department or division. (See Graduate Bulletin).

*Thesis.* Optional with department or division. (See Graduate Bulletin).

*Final Examinations.* A final examination, either written or oral or both, is required.

*Graduate Credit for Seniors.* A senior student regularly enrolled in his last semester of work at Arizona State College at Tempe, who is within 12 semester hours of completing the requirements for the bachelor's degree, may register for a sufficient number of additional hour of 400 level "g" courses, or graduate courses to complete his semester or term program. Official graduate credit may be had for this work subject to the following regulations:

1. The courses must be taken during the last semester of the senior year of the student's undergraduate work.
2. The courses must be approved by his undergraduate adviser, the professor teaching the course(s), and the Director of Graduate Study at the time of registration. The necessary forms are available in the Graduate Office. If any change needs to be made, it *must* be made during the *Drop-Add Period*. The Drop-Add Card must be approved by the Director of Graduate Study.
3. Only 400g-level courses may be taken unless the student has a grade index of 2.75 or above. If his index is 2.75, or above, he then will be permitted to take a 500-level course in a field in which he has had over 24 semester hours of undergraduate work and the necessary prerequisites.
4. Any student whose undergraduate grade index is below 2.75 (B-) is limited to six hours of 400-level "g" courses. In no case, however, may a student whose index is below 2.75 carry a total load of more than 12 semester hours of undergraduate and graduate work.

*Transfer of Credits.* Six semester hours of graduate credit taken in other institutions may be transferred for credit toward the master's degree. Such courses must have been taken in a fully accredited college or university which offers graduate study and must be acceptable toward graduate degrees in that institution. The courses to be acceptable must fit into the planned program of studies at Arizona State.

*Extension Courses.* Up to ten semester hours of credit toward the master's degree may be earned in extension courses offered by Arizona State College at Tempe. Students who take graduate extension courses with a view to meeting degree requirements should apply for admission to the Master's Degree Program. It should be remembered that not more than six semester hours of graduate credit, completed before admission to the degree program, will be accepted toward a master's degree, and that a minimum of twenty semester hours must be completed in residence.

*Maximum Time Limits.* A program leading to the master's degree must be completed within a span of six years. Any exception to this rule must have the approval of the Graduate Council. A petition requesting an extension of time must explain the exten-



uating circumstances causing the delay. The council is in no way obligated to extend the time, but may do so if circumstances justify it.

*Course Load.* A graduate student studying full time is allowed to enroll for sixteen semester hours a semester and six semester hours each summer term. Students working full time and full-time teachers are limited to six semester hours a semester.

*Scholarship Requirements.* Excellence in performance is expected of students doing graduate work. A student who does not appear to be doing satisfactory work may be required to withdraw from the degree program.

An average grade of B or better for all graduate work is required for graduation with the master's degree. However, no more than six semester hours of a C grade may be accepted toward degree requirements. The grade of D is not accepted in meeting the master degree requirements. The thesis carries credit with no grade given.

Graduate course work other than thesis reported "incomplete" must be completed within a year of the official ending of the course. Thesis will be open for credit for a period of two years following the official ending of the semester in which the student registered for the course.

*Graduate Credit Courses.* Courses carrying graduate credit are numbered 400g, 500, 600 and 700. The 400g-level courses are open to seniors and graduates. The 500-level courses are open to graduate students only. The 600-level courses generally are reserved for the Education Specialist Degree Program and other specialized professional programs. The 700-level courses are reserved primarily for the Doctor's Degree Program.

*Graduate Bulletins.* Refer to the Graduate Bulletin for a listing and a detailed description of the Graduate Programs at Arizona State College. Copies of the Graduate Bulletin and forms may be obtained in the Office of the Director of Graduate Study.

### Education Specialist Degree

The Education Specialist Degree Program is designed to develop specialization in an area of education. At present the areas of specialization are: (1) Public School Administration; (2) Public School Supervision; (3) Curriculum; (4) Guidance and Counseling. The program requires a minimum of thirty semester hours of planned graduate work beyond the master's degree, plus a scholarly paper in a field of specialization. This degree is terminal and is not intended as an intermediate step toward the doctorate in education.

*Admission to the Degree Program.* Admission to the program must be cleared before the course work outlined in the total pattern is begun. Course work completed prior to admission to the

program cannot be used to build the minimum pattern of the required thirty hours. In order to be eligible to apply for this degree, the applicant must:

1. Hold a master's degree with twenty or more graduate level semester hours in education and/or psychology.
2. Have an adequate background in the areas involved in his specialization plan.
3. Have an acceptable undergraduate and graduate scholastic average.
4. Have had two years of successful teaching experience.

An Admissions Committee, selected by the Graduate Council, will consider those applicants who have:

1. Filed an application.
2. Filed a transcript of all undergraduate and graduate work.
3. Prepared and filed a summary of educational experience.
4. Taken the qualifying examination.

*Graduation Requirements.* In order to be eligible for graduation with the Ed.S. degree the following requirements must be met:

1. Complete within five years a thirty-semester hour approved program with no grade below a "B".
2. Complete an approved scholarly paper on some phase of the selected specialization. Four typewritten copies of this paper must be filed with the Director of Graduate Study two months before graduation after acceptance by the Committee and Dean of College of Education.
3. Pass a written and oral comprehensive examination over the work of specialization.

### Doctor of Education Degree

The Doctor of Education Degree Program is designed to provide professional training and experience for a variety of workers in the broad field of education. The structure provides flexibility to meet individual needs and interests. The principal groups to be served by this program are as follows: (1) those seeking to increase professional competence as school administrators; (2) those seeking further preparation for teaching in elementary, secondary, junior college, and higher education; and (3) those seeking advanced training in other recognized professional education pursuits.

*Admission to the Doctoral Program.* Students who seek admission to the Doctoral Program must assume the responsibility for the following:

1. Filing an application for admission.
2. Filing transcripts of all college work completed.

3. Submitting to a qualifying examination. (Students who seek admission to the Doctoral Program must submit to a qualifying examination. Ordinarily, this will include the Graduate Record examination. The qualifying examination is administered in December, April, June, and July. Application must be filed in the office of the Director of Graduate Study at least three weeks in advance. Fee, \$7.00.)
4. Filing letters of recommendation.

Applications, transcripts, and examination results will be evaluated by the Doctoral Committee on Admissions. This committee will be guided by the complete profile of each individual student and may consider the following criteria in determining his eligibility for the program.

1. Whether or not the student earned a bachelor's degree in an accredited institution and has a satisfactory undergraduate record.
2. Whether or not the student has satisfactory scholarship in any graduate work completed at Arizona State College at Tempe or elsewhere.
3. Whether or not the student has completed a satisfactory undergraduate program in education and psychology courses.
4. Whether or not the student has adequate background in general and professional education.
5. Whether or not the student has the scholastic aptitude and ability to the successful pursuit of a program of doctoral work in professional education.
6. Whether or not the student has filed for consideration letters or statements from persons in a position to judge his readiness for doctoral work.

Upon being admitted to the Doctoral Program on the basis of the above criteria, a doctoral advisory committee will be appointed, the chairman of which will be the student's adviser. The student should consult his adviser, plan a doctoral program of studies approved by his advisory committee and the Dean of the School of Education, and file that program in triplicate, in the office of the Director of Graduate Study. This program should be planned and filed before the end of the first semester or summer session in residence.

*Program of Study for Doctor of Education Degree.* The degree of Doctor of Education is conferred on the basis of a high degree of attainment in the constructive study of an educational problem and for demonstrated ability to pursue independent research in some phase of education. It is not conferred solely for the reason of faithful study for a prescribed period of time, nor as a certificate of the satisfactory completion of course requirements.

Experience shows that for students to meet the standards set, at least three years of study beyond the bachelor's degree are necessary. The amount of time a student needs to spend in residence depends to a large degree on his individual program of studies.

Transfer of credits from other recognized institutions is permissible. The amount and kind depends largely upon the objectives agreed upon between student and adviser. Regardless of how many may be accepted by transfer, a sufficient number of credits must be taken at Arizona State College to assure competency in the field the candidate selects. Minimum residence requirements must also be met.

In addition to course work, an acceptable dissertation is required. The dissertation carries no semester hours of credit.

All course work taken beyond the point of admission to the Doctoral Program must be completed, except by petition to and approval by the Graduate Council, within a period of seven consecutive years.

Upon making application for the final examination for the Doctor's degree, the candidate must submit evidence of at least two years experience either in teaching or other educational service.

# Summer Session

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*Terms.* The summer session consists of a one-week pre-session, two terms of five weeks each, and a post-session of three weeks.

*Air Cooling.* Most of the buildings are cooled by refrigeration systems. The other buildings are cooled by evaporative coolers.

*Forenoon Classes.* Most classes meet in the forenoon, leaving the afternoons open for study, reference reading, laboratory work, conferences with faculty members or recreation.

*College Credit.* Students are permitted to earn a maximum of six semester hours of credit each five-week session. Four semester hours is the maximum credit which may be earned in the three-week post session. In three ten-week summer sessions, the residence requirement of the College can be met. By attending summer sessions, students can graduate in three years or less.

*Admission to the Summer Session.* In general, applicants for admission are expected to present evidence of graduation from an approved four-year high school, or evidence of good standing in an accredited college. Mature students, over 21 years of age, are admitted without the above qualifications, but with the understanding that all admission requirements must be satisfied before they can become candidates for the bachelor's degree.

*Graduate Study.* The summer session offers an excellent opportunity for those who have already acquired a bachelor's degree to do graduate work for personal edification or to work for advanced degrees.

*Fees and Expenses.* The summer school fee is on a per semester hour basis. Textbooks and supplies may be purchased at the college book store on the campus. Board and room for the summer are furnished on campus at the prevailing rates.

*Bulletin.* A preliminary announcement of the offerings will be mailed to the teachers in the State early in the year. Requests for the Summer Bulletin or other information should be addressed to the Director of Summer Session.

# Extension Division

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Many people who desire to continue their studies while actively engaged in their business or professional activities find it impossible to attend the regular sessions of the College. In response to this demand, the Extension Division has been established and offers two special types of service: extension courses offered at residence centers and correspondence courses. By these two methods, some regular college courses are made available to these people at a moderate cost.

## Residence Center Classes

Residence centers will be organized where there is sufficient demand, when approved instructors are available, and when library or laboratory facilities are adequate to provide college-level instruction. A Residence Center and offering must be approved by the Director of Extension. Two types of programs are carried on at the Residence Centers: (1) recognized and accepted college credit courses that serve to meet degree requirements at the undergraduate and graduate levels, and (2) informal educational experiences for personal pleasure, general cultural advancement, refresher training courses, and the acquisition of new interests, without reference to college-level standards or credit. Courses taken in Residence Centers are counted as residence credit toward bachelor's degree requirements.

The fee for all extension courses is \$10.00 per semester hour, and is payable at the time of registration. For further information concerning residence center courses, write the Director of Extension.

## Correspondence Courses

Through the use of the mails, the privileges of the college campus and service of the teaching faculty are extended to the student whose daily occupation prevents enrollment in the regular sessions.

Persons desiring to enroll for correspondence courses will write to the Correspondence Division for an enrollment blank and a copy of the Bulletin which gives a list of the courses offered. When this enrollment blank, properly filled out and accompanied by remittance to cover the fee, is received, the first lesson assignments will be mailed to the student.

The fee for correspondence courses is \$7.50 per semester hour of credit carried. Credit earned in correspondence courses may be applied toward the bachelor's degree; however, not more than 16 semester hours of correspondence work will be accepted toward the degree. Correspondence courses are not accepted for credit toward the advanced degrees.

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Students who fail a course on campus, or at a residence center, are not permitted to take the same course by Correspondence.

No student doing work in residence may register for a course by correspondence without obtaining the approval of the Admissions and Standards Committee. All inquiries concerning correspondence courses should be addressed to the Correspondence Division.

# Courses of Instruction

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Descriptions of all courses offered by the College during the regular academic year are found in the section which follows. Courses offered as "summer only" courses are not included in this section. For convenience instructional departments and divisions are arranged in alphabetical order.

## Classification of Courses

The course numbering system has been designed to facilitate sorting and tabulating by machine methods.

Each College has a single digit code number as follows:

- 1.—College of Liberal Arts
- 2.—College of Education
- 3.—College of Business Administration
- 4.—College of Applied Arts and Sciences

Within each of the instructional departments or divisions, courses are grouped by "subject fields." Each subject field carries a two-letter code, e.g. AR for Art.

The actual course number is made up of three digits, the first of which indicates the "level" of the course by years, the second may indicate a sub-field of studies, and the third, alone or in conjunction with the second, indicates the sequence of the course in the subject field.

Courses numbered:

- 100-199 are freshman level courses and are designed primarily for freshman.
- 200-299 are sophomore level courses and are designed primarily for sophomores. They are open to freshman only if they have had the designated prerequisites.
- 300-399 are junior level courses and are designed primarily for juniors.
- 400-499 are senior level courses and are designed primarily for seniors. Some courses at this level may be taken for graduate credit. Courses approved for graduate credit are designated by "g" following the number.
- 500-599 are graduate level courses for graduate credit only. They may be taken by eligible seniors with the permission of the Director of Graduate Study.
- 600-699 are graduate level courses for graduate students pursuing a specialist degree program or a specialized professional program.
- 700-799 are graduate level courses primarily for graduate students pursuing a doctor's degree program.



## Independent Study

The course number 499 has been reserved for Independent Study courses in each of the instructional departments or divisions of the colleges at the undergraduate level. Independent Study courses are honor courses and may be taken only by outstanding senior students who have completed at least one semester in residence. To be eligible for an Independent Study course a student must have a cumulative scholarship index of 3.00 or better in his major or field of specialization.

An Independent Study course is designed to provide an opportunity for the superior senior student to do an original study or investigation in his major or field of specialization on an individual basis with a minimum of supervision or direction. An Independent Study course is not to be regarded as a substitute for a catalog course, nor as a means for taking a catalog course on an individual basis. Courses listed in the catalog may not be taken as Independent Study courses.

Application for Independent Study courses must be made well in advance of regular registration period with the student's adviser. The application must be signed by the adviser, and approved by the instructor under whom the student will work, and by the head of the department or division in which the course is taken. A course fee may be required.

## Special Graduate Courses

- 500 *Research Methods.* Acquaints the student with the essential steps in the scientific method and with the techniques and skills used in research. Required for most masters degrees. Prerequisite: admission to a Masters Degree Program. Credit, 3 hours.
- 590 *Reading and Conference.* Independent reading and study conferences with assigned professors. Prerequisite: admission to a graduate degree program. Credit, 3 hours.
- 591 *Seminar.* A course organized for a group of graduate students for advanced study and research under the direction of one or more staff members of the department offering the seminar. Given by departments at regular intervals. Master's degree students limited to a maximum of two seminars, (see limitations). Prerequisite: admission to candidacy. Credit, 3 hours.
- 592 *Research.* A careful investigation of a problem under the direction of an adviser. This course may not be used as research for a thesis. Prerequisite: admission to the Master's Degree Program. Credit, 3 hours.
- 593 *Thesis.* An organized written presentation of results of study, investigation, and research. Prerequisite: admission to candidacy for a master's degree. Credit, 6 hours.

*Limitations on Special Courses.* Not more than fifteen semester hours in courses 590, 591, 592, and 593 will be accepted for the master's degree.

### Prerequisites

A student registering for a course must meet the prerequisites listed for it or otherwise satisfy the instructor that he has had the equivalent preparation.

### Starred Courses

In curriculum outlines, certain courses have a star placed in front of them. This indicates that the course is given both the first and second semester of that year. The desire is to have one-half of the students take the course the first semester, and the other half the second semester.

### Withdrawal of Courses

The College does not offer each year all of the courses listed in the catalog. The Schedule of Classes should be consulted for those courses offered each semester and during the summer terms.

## Agriculture

ROBINSON (Head, Division of Agriculture), BARRETT, JUDD,  
MOODY, E. PARKER, L. M. PARKER, RASMUSSEN,  
G. L. RICHARDSON, RIGGINS, TAYSOM.

### Agricultural Economics

AE 100. *Agricultural Economics.* Deals with the principles of economics as they apply to agricultural problems. The economic factors governing crop production and its distribution will be given major consideration. Credit, 3 hours.

205 *Principles of Farm and Ranch Organization.* The principles, concepts, and procedures of farm and ranch organization as applied to the business of farming and ranching. Fee, \$1.00. Three lectures or equivalent in field work. Credit, 3 hours.

210 *Agricultural Marketing and Merchandising.* Underlying principles, concepts, and factors that control the efficient marketing and merchandising of agricultural products. Credit, 3 hours.

305 *Farm and Ranch Management.* Designed primarily to teach underlying business principles of farm and ranch management as they affect the over-all administration of agricultural-production-business enterprises; and to develop business judgment in the actual, practical business of operating and managing farms, ranches, and business enterprises closely connected with agricultural production. Fee, \$1.00. Three lectures or equivalent in field work. Credit, 3 hours.

306 *Advanced Farm Management.* Factors contributing to success of selected farm enterprises are studied. Also, considered are factors responsible for farm business losses from legal and natural causes, business mistakes, and poor judgment. Three lectures or equivalent in field work. Credit, 3 hours.

308 *Agricultural Finance.* Acquisition of capital, use of credit, legal aspects of finance and financial management of working capital. Three lectures or equivalent in field work. Credit, 3 hours.

314 *Farm Cooperatives.* Principles of cooperation in agriculture, methods of organization, operation and management of cooperative sales, purchasing and service associations. Fee, \$1.00. Credit, 3 hours.

402 *Land Economics and Utilization.* Economic considerations of land management, evaluation and appraisal of land, land use capabilities and economic land classification, conservation practices, and economic problems of land development. Credit, 2 hours.

410 *Farm Labor Management.* General principles and economics of farm labor requirements related to farm management costs and income. Fee, \$1.00. Three lectures or equivalent in field work. Credit, 3 hours.

412 *Agricultural Policy.* Government interest in agriculture, agricultural programs, also national land and water policies and related problems of agriculture. Three lectures or equivalent in field work. Credit, 3 hours.

### **Agricultural Mechanics**

AM 122 *Agricultural Mechanics.* Study and application of various mechanical skills important to agriculture. Prerequisite to all other courses in agriculture mechanics. Fee, \$4.00. One lecture, 3 hours laboratory. Credit, 2 hours.

126 *Farm Machinery.* Care, adjustment, and field operation of tillage and cultivating implements, planting, fertilizing, and harvesting machinery. Fee, \$2.00. One lecture, 3 hours laboratory. Credit, 2 hours.

326 *Farm Tractors.* Operation, servicing, and repairing of gasoline and diesel-powered tractors. Fee, \$4.00. One lecture, 6 hours laboratory. Credit, 3 hours.

328 *Farm Structures and Equipment.* Functional requirements of farm buildings, use of building materials, farm carpentry, and constructional methods. Fee, \$4.00. One lecture, 3 hours laboratory. Credit, 2 hours.

427 *Advanced Agriculture Mechanics.* Design, construction, and repairing of farm equipment. Fee, \$4.00. One lecture, 6 hours laboratory. Credit, 3 hours.

428 *Advanced Welding for Shop Teachers.* Instruction in welding applicable to the farm shop together with methods of instruc-

tion and safety precautions. Laboratory work will include vertical and overhead welds, brazing and bronze welding, welding of cast iron, sheetmetal, pipe, stainless and other special alloy steels, with emphasis given to hard-facing problems. Rudiments of metallurgy will be covered including the identification of metals by spark tests, chemical and microscopic analysis. Prerequisite: One course in welding or equivalent experience. Fee, \$5.00. One lecture, 6 hours laboratory. Credit, 3 hours.

### **Agronomy**

AG 130 *Crop Production*. The principles of field crop production. Special emphasis on cultural practices in Arizona. Prerequisite for all succeeding agronomy courses. Fee, \$1.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

232 *Soils*. Formation, classification, and properties of soils; their relation to crop production; soil conservation. Prerequisite: one course in college chemistry. Fee, \$2.00. Three lectures or equivalent. Credit, 3 hours.

234 *Irrigation Principles and Practices*. History of irrigation, extent and importance, water measurements, application and conservation of irrigation water. Prerequisite: AG 232. Fee, \$1.00. Three lectures or equivalent in field work. Credit, 3 hours.

236 *Crop Production Practices*. Supervised farm experience in field crop production including operation of farm machinery, methods of tillage, planting, irrigation and harvesting. Prerequisites: AG 130 and approval of adviser. Fee, \$1.00. One discussion period, 3 two-hour laboratories. Credit, 3 hours.

237 *Crop Production Practices*. Continuation of AG 236. Fee, \$1.00. Credit, 3 hours.

246 *Conservation of Agricultural Resources*. Basic course devoted to developing an understanding of the relationships of agricultural resources to society and the necessity for maximum production from the agricultural resources of land, water, timber, and minerals. Fee, \$2.00. Three lectures or equivalent in field work. Credit, 3 hours.

330 *Soil Fertility*. Problems involved in the use of fertilizers, crop rotations, and irrigation water in the management of soils. Prerequisite: AG 232. Fee, \$2.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

332 *Commercial Fertilizers*. A study of the composition, properties, availability and economic use of commercial fertilizers and related materials. Prerequisite: AG 232. Fee, \$1.00. Three lectures or equivalent. Credit, 3 hours.

338 *Range Management*. A study of the problems of improvement and utilization of range lands. Prerequisites: AH 150; 1-BO 100. Fee, \$2.00. Three lectures or equivalent in field work. Credit, 3 hours.

340 *Weeds and Weed Control.* Identification of weed seeds and plants. The weed problem in agriculture and methods of control. Prerequisite: 1-BO 100. Fee, \$1.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

342 *Grain Crops.* The production, harvesting, and utilization of grain crops. Fee, \$1.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

344 *Alfalfa and Forage Production.* The methods of producing, harvesting and storing of the principal forage crops with particular emphasis on alfalfa. Pasture management and the place of forage crops in rotations and soil conservation are considered. Fee, \$2.00. Three lectures or equivalent in field work. Credit, 3 hours.

345 *Cotton Production.* Study of the cultural methods and the problems involved in the production and harvesting of cotton. Prerequisite: 1-BO 100. Fee, \$1.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

436 *Soil Conservation.* Soil conservation practices and their application to farm situations with particular emphasis on the problems of the Southwest. Prerequisite: AG 232. Fee, \$2.00. Three lectures or equivalent in field work. Credit, 3 hours.

441 *Plant Breeding.* Principles and methods used in improvement of important farm crops. Prerequisites: 1-BO 100; 1-BI 340. Fee, \$2.00. Three lectures or equivalent in field work. Credit, 3 hours.

447. *Crop Production and Management.* Crop production factors and their application to farm management. Farm plans are prepared for typical crop production enterprises of the region. Prerequisite: AG 234. Fee, \$1.00. Three lectures or equivalent in field work. Credit, 3 hours.

### Animal Husbandry

AH 150 *Principles of Animal Husbandry.* Principles of livestock management and production. Score card and judging practices. Prerequisite to other animal husbandry courses. Fee, \$1.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

151 *Breeds of Livestock.* Characteristics of breeds of farm animals; origin, history, and development. Two lectures. Credit, 2 hours.

252 *Animal Feeding.* Study of the different feeds and feeding methods, digestion of feeds, and balancing rations. Prerequisites: AH 150 and one course in college chemistry. Fee, \$2.00. Three lectures or equivalent in field work. Credit, 3 hours.

253 *Livestock Production Practices.* Supervised farm experience in animal feeding, breeding, fitting for show, keeping records, and other practices in the field of livestock production. Prerequisite: AH 150. One discussion period, 6 hours laboratory. Credit, 2 hours.

254 *Livestock Production Practices*. Continuation of AH 253. Credit, 2 hours.

350 *Livestock Judging*. A study of various breeds of livestock. Trips to stock farms, ranches, and livestock fairs. Prerequisites: AH 150, 151. Fee, \$2.00. Two lectures, 3 hours laboratory; or equivalent in field work. Credit, 3 hours.

359 *Swine Production*. Production, breeding, feeding, and management of swine. Prerequisites: AH 150, 151, 252. Fee, \$1.00. Two lectures or equivalent in field work. Credit, 2 hours.

360 *Beef Production*. Production, breeding, feeding, and management of beef cattle. Prerequisites: AH 150, 151, 252. Fee \$1.00. Two lectures or equivalent in field work. Credit, 2 hours.

361 *Sheep Production*. Production, breeding, feeding, and management of sheep. Prerequisites: AH 150, 151, 252. Fee, \$1.00. Two lectures or equivalent in field work. Credit, 2 hours.

451 *Advanced Livestock Judging*. An advanced course in the judging of livestock. Trips to farms, ranches, and livestock fairs. Prerequisite: AH 350. Fee, \$1.00. One lecture, 3 hours laboratory. Credit, 2 hours.

453 *Animal Nutrition*. Fundamental principles of nutrition, as they apply to the use of proteins, carbohydrates, fats, minerals, and vitamins by farm animals. Prerequisites: AH 252; 1-CH 231. Fee, \$1.00. Three lectures or equivalent in field work. Credit, 3 hours.

456 *Animal Breeding*. The principles of genetics applied to animal breeding. Prerequisites: 1-BI 340; 1-ZO 100. Fee, \$1.00. Three lectures or equivalent in field work. Credit, 3 hours.

457 *Veterinary Science*. The form and functioning of the body systems of farm animals. Special attention given to the digestive and reproductive systems. Prerequisites: AH 150; 1-ZO 100. Fee, \$2.00. Three lectures, 3 hours laboratory. Credit, 4 hours.

458 *Livestock Diseases and Sanitation*. Study of animal health problems as encountered on the farm and ranch. The importance of sanitation and management in disease control and animal health. Prerequisites: AH 457; 1-ZO 100. Fee, \$2.00. Three lectures or equivalent in field work. Credit, 3 hours.

464 *Livestock Production and Management*. Such problems as methods of production, livestock enterprises, economics, budgeting, finance, loss prevention, and marketing are considered in relation to livestock production and management. Prerequisite: AH 252. Fee, \$1.00. Three lectures or equivalent in field work. Credit, 3 hours.

### Dairy Husbandry

DH 170 *Principles of Dairy Husbandry*. A study of the principles of dairy husbandry such as feeding, breeding, management,

selection, herd improvement, artificial insemination, diseases, calf raising, milking, and dairy equipment. Fee, \$1.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

271 *Dairy Production Practices*. Supervised farm experience in dairy feeding, breeding, fitting for show, keeping records and the attainment of proficiency in skills associated with a dairy enterprise. Prerequisite: DH 170. One discussion period, 6 hours laboratory. Credit, 2 hours.

274 *Milk and Milk Products*. Survey of the composition, properties, bacteriology, and nutritional value of dairy products. Babcock and other tests, common dairy processes in the production of market milk and manufactured dairy products. Fee, \$1.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

370 *Dairy Cattle Selection and Breeding*. A study of the contributions made by outstanding individuals and families in the various breeds. Evaluation of pedigrees and performance records. Selecting the individual cow according to appearance (judging and classification). Prerequisite: DH 170. Fee, \$1.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

373 *Animal Reproduction and Artificial Breeding*. A study of methods and techniques used in natural and artificial breeding of farm animals including a review of the structure and functioning of the reproductive system. Prerequisite: AH 457. Fee, \$5.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

378 *Market Milk Production*. Modern methods of producing, assembling, processing and marketing milk. Sanitation, quality control, legal standards, pricing, milk plant operation. Prerequisites: DH 170; 1-MI 201. Fee, \$1.00. Three lectures or equivalent in field work. Credit, 3 hours.

474 *Dairy Production and Management*. An integration of the principles of feeding, breeding, and management that are fundamental to economical production and successful operation of the dairy enterprise. Prerequisites: DH 170, 271; AH 252. Fee, \$2.00. Three lectures or equivalent in field work. Credit, 3 hours.

## Horticulture

HO 180 *Principles of Horticulture*. An introduction to the fields of horticulture dealing with the fundamentals of fruit, vegetable and flower production, and home landscaping. Fee, \$2.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

281 *Plant Propagation*. A study of principles and development of skills in the propagation of horticultural plants, using seeds, cuttings, budding and grafting, bulbs, tubers and corms. Experience in management of lath-houses, greenhouses, cold-frames and hot-beds. Prerequisites: 1-BO 100;. One course in horticulture. Fee, \$2.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

284 *Ornamental Plants*. A study of the characteristics and growth requirements of ornamental annuals, perennials, bulbs, shrubs and trees used for landscaping. Fee, \$2.00. One lecture, 3 hours laboratory. Credit, 2 hours.

289 *Horticultural Production Practices*. Practical experience in horticultural production problems. Prerequisite: HO 180. Six hours laboratory. Credit, 2 hours.

380 *Landscaping*. Principles and practices in beautification of homes and public areas by lawns and ornamental plants. Prerequisite: HO 284. Fee, \$2.00. Two lectures, 3 hours of laboratory. Credit, 3 hours.

385 *Tree-Fruit Production*. A study of the basic factors involved in the successful production of citrus and deciduous tree fruits. Propagation, pruning, fertilizing, irrigating, pest-control and harvesting. Prerequisite: 1-BO 100. Two lectures, 3 hours laboratory. Credit, 3 hours.

386 *Small Fruits*. Methods of production of grapes, brambles and strawberries under irrigation. Planting, pruning, irrigating, pest control, fertilizing, and harvesting. Prerequisite: HO 385. One lecture, 3 hours laboratory. Credit, 2 hours.

387 *Vegetable Crops*. Basic principles and practices used in the production of vegetable crops, including variety selection, pre-planting practices, fertilizing, irrigating, thinning, insect and disease control, and harvesting. Fee, \$1.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

487 *Advanced Vegetable Crops*. The physiology of vegetable crops as influenced by cultural practices and environmental factors; mineral nutrition, water relations, photoperiodism, temperature relations, plant growth substances, and current research in the field. Prerequisites: HO 387; 1-BO 360. Credit, 3 hours.

488 *Handling of Fruits and Vegetables*. Methods of harvesting, packaging, and storing in maintaining high market quality of fruits and vegetables. Prerequisites: 1-BO 100; HO 180 or 385, Two lectures, 3 hours laboratory. Credit, 3 hours.

### **Poultry Husbandry**

PH 190 *Poultry Husbandry*. Poultry management, and application to local and regional conditions. Fee, \$1.00. Three lectures or equivalent in field work. Credit, 3 hours.

291 *Selection and Culling of Poultry*. Selecting poultry adapted to southwestern conditions; separating layers from poor layers and non-layers; practice in culling flocks on valley farms. Prerequisite: PH 190. Fee, \$2.00. One lecture, 3 hours laboratory or equivalent in field work. Credit, 2 hours.



292 *Poultry Production Practices*. Supervised farm experience in poultry feeding, handling eggs, poultry raising for meat production, sanitation practices, and disease prevention (vaccination). Prerequisite: PH 190. Six hours laboratory. Credit, 2 hours.

391 *Poultry Production and Management*. The application of the principles of feeding, breeding, and sanitation to the economics of poultry production; marketing of poultry products; profit calculations. Prerequisite: PH 190. Fee, \$2.00. Three lectures or equivalent in field work. Credit, 3 hours.

392 *Poultry Breeding and Hatching*. Principles and practices of poultry breeding and incubation. Special emphasis on adapting strains to southwestern conditions. Operation of incubators on the College Farm. Prerequisite: PH 190. Two lectures, 3 hours laboratory. Credit, 3 hours.

393 *Poultry Diseases and Sanitation*. Study of health problems of poultry as encountered on the farm. Description and classification of poultry diseases, their diagnosis, control and prevention. Laboratory includes post-mortem examinations and microbiological studies. Prerequisite: PH 190. Fee, \$2.00. One lecture, 3 hours laboratory. Credit, 2 hours.

## Air Science

POOLE (Chairman, Department of Air Science), HILDEBRAND, KARP, KLARE, MCCOY, MOOMAW, WEBSTER, ZECHMEISTER.

### Air Science

AS 101 *Basic Air Science (First Year)*. An introduction to the AFROTC Program and a study of the development of aviation, the classes and structure of aircraft, the basic principles of flight, and the fundamentals of global geography. Two lectures and 2 hours of leadership laboratory per week. Credit, 1.5 hours.

102 *Basic Air Science (First Year)*. A study of the factors and forces influencing international relations, the nation's defense organization, and the role of military aviation. Two lectures and 2 hours of leadership laboratory per week. Credit, 1.5 hours.

201 *Basic Air Science (Second Year)*. A presentation of the elements of aerial warfare including: targets, conventional and thermo-nuclear weapons; a brief study of the USAF Officer Career Program. Prerequisites: AS 101 and 102, or equivalent. Two lectures and 2 hours of leadership laboratory per week. Credit, 1.5 hours.

202 *Basic Air Science (Second Year)*. A continuation of 201 in the study of the elements of aerial warfare to include: aircraft, guided missiles, air bases, and combat operations. Prerequisite: AS 201. Two lectures and 2 hours of leadership laboratory per week. Credit, 1.5 hours.

301 *Advanced Air Science (First Year)*. A study of command and staff concepts, problem solving techniques, principles and techniques of learning and teaching, and communication techniques as a writer, reader, speaker and listener. Prerequisite: Basic Air Science or equivalent. Two lectures and 2 hours of leadership laboratory per week. Credit, 3 hours.

302 *Advanced Air Science (First Year)*. A survey of Military Courts and Boards, aerial navigation, and weather. A study of the organization of a typical air force base and the functions of the key base officers. Preparation for Summer Training Units. Two lectures and 2 hours of leadership laboratory per week. Credit, 3 hours.

311 *Advanced Air Science (Second Year)*. Instruction in Career Guidance leadership and management, and evolution of air warfare concepts which includes: introduction of the Air Force Officer in planning his career, and principles of leadership, techniques (seminar) of the Air Force today, and military aviation and the art of warfare in relation to the role of the Department of Defense. Flight training program for accepted volunteers in CAA approved schools. Prerequisite: AS 302. Two lectures and 2 hours of leadership laboratory per week. Credit, 3 hours.

312 *Advanced Air Science (Second Year)*. Mature treatment of military and political factors affecting air power. International politics and factors contributing to national power; power position of individual states and blocs of states, with reference to military, economic, social, geographic and psychological factors and effectiveness of political institutions. Briefing for commissioned service. Field laboratory in leadership, drill and exercise of command. Flight training program for accepted volunteers in CAA approved schools. Prerequisite: AS 311. Two lectures and 2 hours of leadership laboratory per week. Credit, 3 hours.

## Architecture

ELMORE (Head, Division of Architecture).

### Architecture

AC 100 *Introduction to Architecture*. Development of appreciation of our physical environment through a study of the forms and functions of today's architecture, its continuity with the past and its relation to everyday life. A brief examination of architecture as a profession is included. Credit, 2 hours.

150 *Basic Drawing*. Elements of architectural and topographic drafting; orthographic projection, sections, shades and shadows, isometric, perspective, lettering, line work and conventions. Two lectures, 4 hours laboratory. Credit, 3 hours.

223 *Architectural Design*. Following study of principles basic to all fields of design as included in prerequisite courses, archi-

tectural and related design and planning are studied through a sequence of individual student projects. Prerequisite: 1-AR 111, and 1-AR 141. Nine hours criticized work in studio. Credit, 3 hours.

224 *Architectural Design*. Planning and design of simple buildings with emphasis on structure, utility and organization of space. Prerequisite: AC 223. Nine hours criticized work in studio. Credit, 3 hours.

241 *Sketching and Rendering*. Techniques for design studies and presentation drawings in black and white. Prerequisite: AC 150. Six hours criticized work in studio. Credit, 3 hours.

242 *Sketching and Rendering*. Techniques for design studies and presentation drawings in color. Prerequisite: AC 241. Six hours criticized work in studio. Credit, 3 hours.

261 *Structures*. Principles fundamental to structural design and analysis. Composition and resolution of force systems. Graphic solutions, vectors, reactions, moment and shear diagrams, centroids, moment of inertia, section modulus, radius of gyration, deflection, properties of sections. Design of simple beams and columns in wood and steel. Slenderness ratio, various formulae. Prerequisite: 1-MA 118 or MA 119. Credit, 3 hours.

262 *Structures*. Continuation of AC 261. Analysis and design of: simple, overhanging, cantilever and continuous beams in wood and steel with all types of loading; columns in wood and steel with concentric and eccentric loading; plate and box girders and built-up sections. Prerequisite: AC 261. Credit, 3 hours.

311 *History of Architecture*. A study of our architectural heritage from prehistoric times through Romanesque, mid-twelfth century. Credit, 3 hours.

312 *History of Architecture*. Continuation of AC 311 covering Gothic through 19th century architecture and the roots of contemporary architecture. Prerequisite: AC 311. Credit, 3 hours.

325 *Architectural Design*. Problems involving a detailed study of fundamental relations of materials, equipment and construction in architectural design. Composition of forms of use and beauty. Prerequisite: AC 224. Twelve hours criticized work in studio. Credit, 4 hours.

326 *Architectural Design*. Continuation. Prerequisite: AC 325. Twelve hours criticized work in studio. Credit, 4 hours.

351 *Drawings and Specifications*. Preparation and interpretation of working drawings and specifications for simple buildings. Study of codes and other regulations. Prerequisite: AC 150. Two lectures, 4 hours laboratory. Credit, 3 hours.

352 *Drawings and Specifications*. Continuation. Prerequisite: AC 351. Two lectures, 4 hours laboratory. Credit, 3 hours.

363 *Structures*. Continuation of AC 262. Analysis and design of: trusses in wood and steel; timber connections, riveted and welded connections; framing systems. Reactions, wind loads and bracing, graphic solutions, stress diagrams. Prerequisite: AC 262. Credit, 3 hours.

364 *Structures*. Continuation of AC 363. Reinforced concrete. Properties, vertical and horizontal shear, diagonal tension, bending moment factors, restraint, balanced design, reinforcement for compression, anchorage, deflection, shear, continuity. Theory, analysis and design of: rectangular and T-beams for all loadings and for simple, cantilever, overhanging and continuous spans; floor systems of one-way, two-way and flat slabs; tied, spiral and composite columns; column and wall footings; foundations; walls; stairs. Prerequisite: AC 363. Credit, 3 hours.

371 *Mechanical Equipment in Buildings*. A study of water supply and drainage systems, heating, ventilating and air conditioning, and acoustics. Credit, 3 hours.

372 *Electrical Equipment in Buildings*. A study of electrical systems, lighting, refrigeration and vertical transportation systems. Credit, 3 hours.

413 *Theory of Architecture*. A study of the various building types in contemporary architecture, their histories and significance. A study of the philosophies of leaders in the profession. Prerequisite: AC 312. Credit, 2 hours.

414 *Theory of Architecture*. Extension of AC 413. Development of foundation for student's philosophy of architecture, and architectural practice. Prerequisite: AC 413. Credit, 2 hours.

427 *Architectural Design*. Extension of creative processes studied in prerequisite courses. Prerequisite: AC 326. Twelve hours criticized work in studio. Credit, 4 hours.

428 *Architectural Design*. Continuation. Prerequisite: AC 427. Twelve hours criticized work in studio. Credit, 4 hours.

429 *Architectural Design*. Continuation. Prerequisite: AC 428. Twelve hours criticized work in studio. Credit, 4 hours.

430 *Architectural Design*. A final problem summarizing and demonstrating achievement in the entire curriculum. Written, graphic, and oral presentation to the faculty in architecture. Prerequisite: AC 429. Credit, 4 hours.

431 *Landscape Design*. A study of plant materials, especially those native to the Southwest, and their composition with architectural forms. Prerequisite: AC 326. Two lectures, four hours criticized work in studio. Credit, 3 hours.

432 *Community Planning*. A study of problems and development of solutions relating to neighborhoods, communities, regions

and other large segments of our total environment. Prerequisite: AC 326. Two lectures, four hours criticized work in studio. Credit, 3 hours.

453 *Architectural Working Drawings*. Development of drafting techniques and familiarization with materials and methods of architectural construction. Prerequisite: AC 352. Four hours laboratory. Credit, 2 hours.

454 *Architectural Working Drawings*. Continuation of AC 453. Prerequisite: AC 453. Four hours laboratory. Credit, 2 hours.

456 *Technical Research*. A seminar involving written, graphic and oral reports of the result of research and investigation into specific materials or techniques of construction as selected by students with approval of instructor. Prerequisite: AC 352. Credit, 2 hours.

465 *Structural Design*. Extension of the work begun in prerequisite courses in structures. Indeterminate structures; prestressing; post-tensioning; advanced techniques. Prerequisite: AC 364. Credit, 3 hours.

466 *Structural Design*. Continuation of AC 465. Design of complete structural systems with particular emphasis on integration of structural and architectural design. Prerequisite: AC 465. Credit, 3 hours.

480 *Administration in the Construction Industry*. A study of registration and licensing, contracts, services and fees, bonds, liens, insurance, business organization, legal and ethical procedures, office management, administration during construction, public relations and responsibilities. Prerequisite: AC 351 or CO 383. Credit, 3 hours.

481 *Construction Industry Organization*. A study of the nature, determinants, organization and relationships among the various segments of the construction industry. Functions of the design professions, contractors, material men, labor, real estate and financial organizations. Influence of government. Home building as an integrated industry. Industrialization of the construction process. Prerequisite: AC 480. Credit, 2 hours.

## Construction

CO 191 *Building Materials and Techniques*. Study and practice with accepted and standard methods of construction. Laboratory activity and practical applications to develop familiarization with properties of wood and related basic materials of construction. Blueprint reading. Fee, \$3.00. Two lectures, 4 hours laboratory. Credit, 3 hours.

192 *Building Materials and Techniques*. Continuation in masonry and related basic materials. Prerequisite: CO 191. Fee, \$3.00. Two lectures, 4 hours laboratory. Credit, 3 hours.

- 290 *Pre-plans and Methods*. A study of the procedures of planning and organization employed prior to actual commencement of construction operations. Credit, 3 hours.
- 293 *Materials of Construction*. A study of cement and concrete mixes, stucco, plaster materials, brick and concrete block work, roofing materials, lumber, wood, preservatives, paints and varnishes. Prerequisite: IA 103 or AC 150. Fee, \$4.00. Credit, 2 hours.
- 383 *Estimating in Building Construction*. A study of methods used in estimating preliminary and final costs in architectural planning and building construction; quantity surveys; unit prices; bidding procedures. Prerequisite: AC 352 or CO 192. Credit, 3 hours.
- 384 *Estimating in Building Construction*. Continuation of CO 383. Prerequisite: CO 383. Credit, 3 hours.
- 387 *Estimating in Engineering Construction*. A study of the methods used in estimating preliminary and final costs in engineering construction; quantity surveys; unit prices; bidding procedures. Prerequisite: CO 192. Credit, 3 hours.
- 388 *Estimating in Engineering Construction*. Continuation of CO 387. Prerequisite: CO 387. Credit, 3 hours.
- 391 *Construction Equipment*. Ownership, maintenance and use of equipment used in building construction. Prerequisite: CO 192. Credit, 3 hours.
- 392 *Construction Equipment*. Ownership, maintenance and use of equipment used in engineering construction. Prerequisite: CO 391. Three lectures. Credit, 3 hours.
- 494 *Techniques of Construction*. Considers phases of the subject as concerns the carpenter and/or builder. Deals with construction from the blue print stage to the completion of framing, following standards of the Federal Housing Administration. Prerequisite: IA 121 or CO 192. Fee, \$6.00. Two lectures, 3 hours laboratory. Credit, 3 hours.
- 495 *Organization of Construction Operations*. Processes necessary to efficient conduct of construction operations. Scheduling of work; ordering, storage and handling of materials and equipment; labor relations; coordination, superintendence and on the job management. Prerequisite: CO 192. Credit, 3 hours.
- 496 *Organization of Construction Operations*. Continuation of CO 495. Prerequisite: CO 495. Credit, 3 hours.
- 498 *Shop and Mill Production*. Organization and operation of processes in wood, metal and other shops. Application of principles of mass production; pre-fabrication; standardization; shop drawings. Prerequisite: CO 192. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.
- 499 *Hydraulics and Soil Mechanics*. A study of principles of hydraulics and soil mechanics and their application to problems encountered in construction. Prerequisite: PH 112. Credit, 3 hours.

## Art

WOOD (Chairman, Department of Art), FAILING, GOO, HALE,  
HARTER, JACOBSON, KLOSTER, SCHAUMBURG.

### Art History

AH 102 *Introduction to Art*. Development of understanding and enjoyment of art and its relationship to everyday life through the study of painting, sculpture, architecture, and design. Some laboratory experience. Credit, 2 hours.

115 *History of Fashions*. Research and study of historic costume. Consideration will be given to the adaptation of past styles in dress in designing present day fashions. Credit, 2 hours.

211 *Western Art to the Renaissance*. A survey of western art to the Renaissance. Three hours a week. Credit, 3 hours.

212 *Renaissance Art*. Continuation of AH 211. A survey of the art of the Renaissance in Italy and Northern Europe. Three hours a week. Credit, 3 hours.

213. *Contemporary Art*. A survey of philosophy and trends in twentieth-century art. Three hours a week. Credit, 3 hours.

221 *American Art*. A study of the way in which the cultural unfolding of America has been reflected in the significant trends in American painting, sculpture, and architecture. The survey ranges from American Old Masters to Contemporary artists. The great collection of original American Art owned by Arizona State College, in which virtually all 18th and 19th century masters and many great moderns are represented, serves as source material for the course. Three hours a week. Credit, 3 hours.

414g *Oriental Art*. A survey of the art of China, India, Japan, the Near East, and Polynesia, and the relating of their arts to contemporary art expression. Three hours a week. Credit, 3 hours.

415g *Southwestern Indian Art*. A survey of the unique arts and crafts of the Southwestern American Indians from pre-historic times as related to their historical background and social customs. Three hours a week. Credit, 3 hours.

416g *Mexican Art*. A survey of Mexican Art from Aztec and Mayan through the great contemporary schools. Course taught in English but projects may be submitted in Spanish. Three hours a week. Credit, 3 hours.

441g *Aesthetics*. A course in the mature appreciation and understanding of the arts emphasizing the relationships of art, music, philosophy, and literature. Intended to integrate and give meaning to studio skills for majors in art or music, and to teachers and all who wish to increase understanding of modern arts. Two hours a week. Credit, 2 hours.

442g *Aesthetics*. Continuation of AH 441. Two hours a week. Credit, 2 hours.

### Art Education

AE 201 *Public School Art*. Emphasizes tools, materials and procedures of importance in directing children's art activities. Should precede student teaching. Fee, \$2.00. Four hours a week. Credit, 2 hours.

211 *Crafts for the Elementary School Teacher*. Laboratory experiences stressing inexpensive and salvage materials that children can use. Paper sculpture, (papier mache, collage, mosaic. Copper enameling, stencil and screening, mobiles and holiday crafts, use of tin, wire, wood, and clay. Fee, \$5.00. One lecture, 3 hours laboratory. Credit, 2 hours.

311 *Art in the Elementary School*. Problems of materials, organization, methods, and curriculum for the elementary art specialist or consultant; the Art Supervisor's responsibility in human relations and communications. Two hours a week. Credit 2 hours.

411g *Art Education for Elementary Teachers*. A methods course integrating creative laboratory activities with curriculum planning, art appreciation, visual aids, and evaluation. Fee, \$3.00. One lecture, 4 hours laboratory. Credit, 3 hours.

480g *Methods of Teaching Art*. Methods of instruction, organization, and presentation of appropriate content in Art. Prerequisite: 2-SE 311 or concurrent registration. Credit, 3 hours.

### Art

AR 111 *Drawing and Perspective*. Techniques of drawing and sketching as applied to the realistic and expressive representation of objects, landscapes, buildings, animals, etc. Four hours a week. Credit, 2 hours.

114 *Life Drawing*. Development of skill and expressiveness in drawing the basic form, construction, and action of the human figure from live models. Fee, \$5.00. Six hours a week. Credit, 3 hours.

121 *Beginning Painting*. Emphasis upon composition, color and technical mastery of painting media. Prerequisites for art majors: AR 111, 142. Six hours a week. Credit, 3 hours.

122 *Water Color*. Painting in gouache and transparent water color. Emphasis on techniques, composition, and color. Prerequisites for art majors: AR 111, 142. Six hours laboratory. Credit, 3 hours.

123 *Advanced Painting*. Advanced problems in oil painting. Prerequisite: AR 121. Six hours a week. Credit, 3 hours.

131 *Sculpture*. Modeling, casting, mold making and building armatures; carving in wood or plastic. Prerequisites for art majors: AR 114, 141. Six hours a week. Fee, \$4.00. Credit, 3 hours.



- 132 *Sculpture*. A continuation of AR 131 with an introduction to welded sculpture, portrait modeling, and other processes. Prerequisite: AR 131. Six hours a week. Fee, \$4.00. Credit, 3 hours.
- 141 *Basic Design*. Problems in two and three-dimensional design. A study of design elements through experimentation with wood, wire, and other materials. Fee, \$1.50. Four hours a week. Credit, 2 hours.
- 142 *Basic Design*. Problems in two-dimensional design and color harmony. Four hours a week. \$1.50. Credit, 2 hours.
- 143 *Interior Design*. Design, rendering, and model construction of floor plans, elevations, and interior sketches. Prerequisites: AR 111, 142. Fee, \$2.00. Six hours a week. Credit, 3 hours.
- 161 *Ceramics*. A laboratory course introducing the student to the nature of clay and glazes, hand-forming methods, throwing on the wheel, decorative processes, glaze application, and firing. Prerequisite for art majors: AR 141. Fee, \$5.00. Four hours a week. Credit, 2 hours.
- 162 *Ceramics*. A continuation of AR 161 with increased emphasis on wheel throwing. Development of individual style. Prerequisite: AR 161. Fee, \$5.00. Four hours a week. Credit, 2 hours.
- 171 *Crafts*. A laboratory course in modern design using materials such as metal, wood, leather, and textiles. Field studies, block printing, lapidary work, weaving, silk screen, and bookbinding are also explored. Prerequisite: AR 141 or 142 for art majors. Fee, \$10.00. Wood, metals, copper enamel, and textile paint furnished. Six hours a week. Credit, 3 hours.
- 172 *Native Crafts*. A course in the preparation and use of native materials such as snakeskin, cactus, local stone and wood, plant fibers, bones, etc.; field trips, research in American Indian techniques. Fee, \$10.00. Six hours a week. Credit, 3 hours.
- 181 *Lettering*. Construction, spacing, and arrangement of Roman and Gothic letters. Analysis of Italics, script, and miscellaneous letter forms. Four hours a week. Credit, 2 hours.
- 182 *Commercial Art*. Practical problems in six major graphic media used in advertising. Recommended also for journalism and business administration majors. Prerequisite: AR 181. Fee, \$2.00. Six hours a week. Credit, 3 hours.
- 184 *Fashion Design*. Initial course in designing and constructing fashions. A survey of manufacturers, retailers, designers and illustrators. Prerequisites for art majors: AR 114, 141. Six hours a week. Credit, 3 hours.
- 185 *Fashion Illustration*. Introduction to fashion illustration. Emphasis upon sketching and rendering. Prerequisites: AR 114, 142. Six hours a week. Credit, 3 hours.

191 *Photography*. A laboratory course providing class, field, and darkroom practice in the use of cameras, exposure meters, flash equipment, etc. and in film developing, contact printing, and enlarging. Fee, \$10.00. One hour class, 3 hours laboratory. Credit, 2 hours.

211 *Advanced Drawing*. Emphasis on drawing techniques and composition. Prerequisite: AR 111. Four laboratory hours a week. Fee, \$3.00. Credit, 2 hours.

214 *Life Drawing*. A continuation of AR 114, with increased emphasis on figure composition. Prerequisite: AR 114. Fee, \$5.00. Six hours a week. Credit, 3 hours.

222 *Advanced Water Color*. More advanced problems in picture construction. Prerequisite: AR 122. Six hours a week. Credit, 3 hours.

223 *Advanced Painting Problems*. Problems for those with a serious interest in easel painting or murals as a career or hobby. Prerequisite: AR 123. Six hours laboratory and 1 hour research a week. Credit, 3 hours.

231 *Advanced Sculpture*. Experimenting with various materials and working from model. Prerequisite: AR 131. Fee, \$5.00. Six hours a week. Credit, 3 hours.

241 *Space Design*. Creative design with emphasis on volume and space relationships. Construction in a variety of materials. Continuing use of hand tools and machine tools. Prerequisite: AR 141. Fee, \$5.00. Six laboratory hours a week. Credit, 3 hours.

271 *Advanced Crafts*. Correlation of function with medium and design. Problems in weaving, book-binding, and costume jewelry. Individual problems. Prerequisite: AR 171. Fee, \$3.00. Six hours a week. Credit, 3 hours.

281 *Advanced Lettering*. Emphasis on arrangements and spacing. Prerequisite: AR 181. Four hours a week. Credit, 2 hours.

284 *Advanced Fashion Design*. Designing clothes with relation to price ranges and materials. Style forecasting. Prerequisite: AR 184. Six hours a week. Credit, 3 hours.

285 *Advanced Fashion Illustration*. Illustrating clothes and accessory merchandise for newspaper, magazine, and catalog advertising. Prerequisite: AR 185. Six hours a week. Credit, 3 hours.

314 *Advanced Life Drawing*. Emphasis on form and anatomical structure of figure and head. Various mediums and techniques. Prerequisite: AR 114. Fee, \$5.00. Six hours a week. Credit, 3 hours.

322 *Advanced Water Color*. Prerequisite: AR 222. Six hours laboratory a week. Credit, 3 hours.

- 343 *Stage Craft*. Design and construction of scenery, costumes, and lighting for use in live theater, puppet theater, and television. Open to art majors and art education majors. Fee, \$3.00. Four hours a week. Credit, 2 hours.
- 344 *Advanced Interior Design*. Coordinated planning in decorating interiors. Emphasis upon modern ways of achieving space, renderings in color and perspective, and scale models. Prerequisite: AR 143 or its equivalent. Fee, \$2.00. Six hours a week. Credit, 3 hours.
- 351 *Graphic Arts Processes*. Introduction to modern print-making processes in woodcut, etching, and lithography. Prerequisites: AR 111, 114, 142. Fee, \$3.00. Six laboratory hours a week. Credit, 3 hours.
- 361 *Advanced Ceramics*. Students specialize in more advanced production methods, glaze formula interpretation, some experimental work in clays and glazes. Prerequisites: AR 141, 161. Fee, \$5.00. Six hours a week. Credit, 3 hours.
- 371 *Advanced Crafts*. Students specialize in a particular craft medium or technique. Prerequisite: AR 271. Fee, \$3.00. Six hours a week. Credit, 3 hours.
- 372 *Contemporary Jewelry Design*. Principles of three-dimensional design as adapted to contemporary jewelry. Includes the construction of jewelry projects from copper and silver and the setting of stones. Prerequisites for art majors: AR 141, 142. Fee, \$2.00. Four laboratory hours a week. Credit, 2 hours.
- 381 *Advanced Lettering*. Recommended only to those having a special interest in lettering. Prerequisite: AR 281. Four hours a week. Credit, 2 hours.
- 382 *Advanced Commercial Art*. The student specializes in areas in which he is most interested. Prerequisites: AR 181, 182. Six hours a week. Credit, 3 hours.
- 384 *Advanced Fashion Design*. Students may specialize in designing clothes for special types, for the junior miss, or for children. Prerequisite: AR 284. Six hours a week. Credit, 3 hours.
- 391 *Advanced Photography*. Course in the manipulation and interpretation of light in all its studio and darkroom aspects. Prerequisite: AR 191. Fee, \$10.00. One lecture, 6 hours laboratory. Credit, 3 hours.
- 414g *Advanced Life Drawing*. Continuation of AR 314 with anatomical research, one hour additional each week. Group criticism. Prerequisites: AR 114, 314. Fee, \$3.00. Six hours laboratory, 1 hour outside preparation. Credit, 3 hours.
- 421g *Painting Mediums and Techniques*. A laboratory course to acquaint the student with materials in all varieties of painting. Experimental problems in oil, lacquer, pastel, encaustic, acetate, paints, mosaic, and others. Fee, \$2.50. Four hours a week. Credit, 2 hours.

423g *Portrait and Figure Painting.* Painting from model in oil, gouache, tempera or water color. Prerequisites: AR 123, 314. Fee, \$4.00. Four hours a week. Credit, 2 hours.

425g *Figure Painting.* Prerequisite: AR 423g. Fee, \$4.00. Four hours a week. Credit, 2 hours.

432g *Advanced Sculpture.* For those with a serious interest in the art of sculpture. Prerequisite: AR 231. Fee, \$5.00. Six hours laboratory a week. Credit, 3 hours.

443g *Advanced Interior Design.* Continuation of AR 314. Prerequisites: AR 143, 344. Fee, \$5.00. Six hours a week. Credit, 3 hours.

451g *Graphic Arts Processes.* A continuation of AR 351. Print-making processes including the silk screen. Prerequisites: AR 181, 351. Fee, \$3.00. Six hours a week. Credit, 3 hours.

461g *Advanced Ceramics.* Studio problems adapted to meet individual needs. Curriculum problems, procedures, and techniques for teachers. Advanced research for the individual potter. Prerequisite: AR 361 or equivalent. Fee, \$5.00. Six hours a week. Credit, 3 hours.

482g *Advanced Commercial Art.* Planning and preparation of samples of work for presentation to prospective employers. Prerequisite: AR 382. Six hours a week. Credit, 3 hours.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

## Botany

McCLEARY (Chairman, Department of Botany), JOHNSON, LEATHERS.

### Botany

BO 100 *General Botany.* Brief survey of lower plant life. More detailed study of flowering plants. Fee, \$4.00. Three lectures, 3 hours laboratory. Credit, 4 hours.

170 *The Flora of Arizona.* The identification of Arizona plants, and methods of collecting, preserving, and mounting. Prerequisite: BO 100 or BI 100. Fee, \$3.00. One lecture, 6 hours laboratory or field trip, one weekend trip. Credit, 3 hours.

250 *Plant Anatomy.* A detailed study of flowering plants, relating structure and function in the case of stems, leaves, roots, flowers, fruits, and seeds. Prerequisite: BO 100. Fee, \$4.00. Two lectures, 6 hours laboratory. Credit, 4 hours.

280 *General Plant Pathology.* The principles and agents of disease, including field observations and methods of control. Prerequisite: BO 100. Fee, \$5.00. Two lectures, 6 hours laboratory. Credit, 4 hours.

360 *Plant Physiology*. An investigation of plant growth, nutrition, food synthesis, respiration and reproduction. Prerequisites: BO 100; CH 231. Fee, \$5.00. Two lectures, 6 hours laboratory. Credit, 4 hours.

420g *Plant Ecology*. Plant associations in relation to the major environment factors. Prerequisite: BO 170 or permission of the instructor. Fee, \$4.00. Three lectures, 3 hours laboratory or field trip, one week-end field trip. Credit, 4 hours.

440g *Morphology and Classification of the Thallophytes*. Morphology, taxonomy, and economic importance of the algae and fungi. Prerequisite: BO 100. Fee, \$2.00. One lecture, 3 hour laboratory including field trips. Credit, 2 hours.

447g *Morphology and Classification of the Bryophytes and Pteridophytes*. Morphology, taxonomy, and economic importance of the mosses, ferns and other vascular plants exclusive of the Angiosperms and Gymnosperms. Prerequisite: BO 100. Fee, \$2.00. One lecture, 3 hour laboratory including field trips. Credit, 2 hours.

450g *Plant Microtechnique*. Methods of handling plant materials for cytological and anatomical examination. Prerequisite: BO 100. Fee, \$5.00. One lecture, 6 hours laboratory. Credit, 3 hours.

471g *Grasses and Composites*. Principles underlying the classification and naming of plants. Laboratory emphasis on grasses and composites. Prerequisite: BO 170 or permission of the instructor. Fee, \$4.00. One lecture, 6 hours laboratory, including one week-end field trip. Credit, 3 hours.

472g *Cacti and Succulents of Arizona*. Identification of the principle desert cacti and succulents in the area. Prerequisite: BO 100 or equivalent. Fee, \$3.00. One lecture and 3 hours field work, or 6 hours field work. Credit, 2 hours.

### Microbiology

MI 201 *Microbiology*. Bacteria, molds, and other micro-organisms, and their application in industrial, agricultural, hygienic and domestic problems. Prerequisites: CH 111; BI 100 or equivalent. Credit, 3 hours.

202 *Microbiology Laboratory*. The principles and laboratory techniques used in identifying and handling of micro-organisms. Prerequisite or taken concurrently: MI 201. Fee, \$5.00. Three hours laboratory. Credit, 1 hour.

410g *Advanced Microbiology*. A comparative study of the systematic and pathogenic relationships of micro-organisms with a consideration of the physiological activities of the micro-organisms involved. Prerequisites: MI 202 and CH 231 and consent of instructor. Fee, \$6.00. Three lectures, 6 hours laboratory. Credit, 5 hours.

## Business Administration

OVERMAN (Dean, College of Business Administration), BEALS, BECKER, BRATCHER, BURTON, CALLOWAY, DEMAREST, FARRIS, GIORDANO, GUTENBERG, HEADINGTON, HILKERT, HORNE, JELLEY, KRUEGER, A. LEWIS, LOWE, MOUNT, OSBORN, PEARSON, SHAPIRO, WATKINS, ZACHER.

### Accounting

AC 101 *Elementary Accounting*. Introduction to the theory and practice of accounting applicable to the accounting cycle. Includes journals and ledgers, transactional documents, departmental procedures, and the voucher system. Three lectures, 2 hours laboratory. Credit, 4 hours.

102 *Elementary Accounting*. A continuation of AC 101. Accounting theory and practice applicable to partnerships, corporations, cash, receivables, inventories, fixed assets, liabilities, and manufacturing accounts. Three lectures, 2 hours laboratory. Credit, 4 hours.

181 *Payroll and Miscellaneous Taxes*. Payroll records and reports required by federal and state regulation. Prerequisite: AC 102. Credit, 2 hours.

201 *Intermediate Accounting*. Accounting theory and practice applicable to corporate net worth accounts, investments, reserves, and income. Prerequisite: AC 102. Two lectures, 2 hours laboratory. Credit, 3 hours.

202 *Intermediate Accounting*. Accounting theory and practice applicable to current assets, fixed assets, liabilities, and sources and applications of funds. Prerequisite: AC 102. Two lectures, 2 hours laboratory. Credit, 3 hours.

221 *Mathematics of Accounting*. Review of simple interest, bank discount, cash and trade discount, a study of the elementary principles of compound interest and annuities, and other business calculations. Prerequisite: 1-MA 116. Credit, 2 hours.

322 *Mathematics of Finance*. Compound interest and annuities, bond valuation, amortization, and income tax problems. Prerequisites: 1-MA 116; AC 221. Credit, 2 hours.

331 *Cost Accounting*. Specialized accounting procedures applicable to job order and process cost manufacturing operations. Prerequisite: AC 201. Credit, 3 hours.

341 *Budgetary Control*. Installation and administration of a budgetary control system, analysis of results obtained, and the use and interpretation of such results by management. Prerequisites: AC 201, 202, and 331. Credit, 2 hours.

383 *Advanced Accounting*. Accounting methods and procedures applicable to partnerships, joint ventures, installment sales, and consignments. Prerequisite: AC 202. Two lectures, 2 hours laboratory. Credit, 3 hours.

409g *Governmental and Institutional Accounting*. Specialized accounting methods and procedures applicable to federal, state, and municipal governmental units, and religious, charitable and non-profit organizations. Prerequisite: AC 201, 202. Credit, 3 hours.

415g *Financial Statement Analysis*. Analytical methods applied to financial statements for the guidance of management. Prerequisite: AC 102. Credit, 3 hours.

432g *Advanced Cost Accounting*. Extension of cost accounting methods and procedures to standard, estimated, and distribution cost systems. Prerequisite: AC 331. Credit, 3 hours.

442g *Controllership*. An analysis of the functions of the controller and the organization of his department. Consideration is given to the responsibilities of the controller as a part of the administrative group and to the scope of the problems with which he deals. Prerequisites: AC 201, 202, 331. Credit, 2 hours.

444 *Machine Accounting Procedures*. Theory and practice in the use of punch-card accounting machines in accounting systems. Designed to acquaint accounting majors with the operation, potentialities, and economic application of electronic data processing machines to business uses. Prerequisite: AC 102. Credit, 2 hours.

447g *Accounting Systems*. Adaptation and installation of an accounting system to meet the particular needs of any given business operation. Prerequisites: AC 201, 202, and 331. Credit, 2 hours.

451 *Federal and State Income Tax*. Laws and regulations; preparation of tax returns; income tax procedures. Prerequisites: AC 201, 202. Credit, 3 hours.

452 *Federal and State Income Tax*. A continuation of AC 451. An introduction to estate taxes, gift taxes, miscellaneous taxes, and refund claims. Prerequisite: AC 451. Credit, 3 hours.

472g *Consolidations and Mergers*. Theory and practice applicable to the consolidation of parent and subsidiary financial statements and the merging of corporate interests. Prerequisite: AC 383. Credit, 2 hours.

481g *Auditing Theory and Practice*. Auditing standards, procedures, programs, working papers, internal control, and the ethical and legal responsibilities of the certified public accountant. Prerequisite: AC 202. Credit, 3 hours.

482g *Auditing Theory and Practice*. Continuation of AC 481. Practical application of auditing standards and practices to an audit case with practice in the writing of an audit report. Prerequisite: AC 481. Credit, 3 hours.

501 *Managerial Accounting*. A graduate survey in accounting designed to give graduate students a basic understanding of the

principles and functions of the subject, including methods of determining income, valuation theory, accounting for owners' equities, accounting for corporation securities, analysis and interpretation of accounting reports, and the relationship of accounting to economics. Prerequisite: AC 102. Credit, 2 hours.

505 *Law in Professional Accounting.* Law applicable to the various forms of business organizations and the transactions conducted by these business entities. Prerequisite: GB 305. Credit, 2 hours.

521 *Advanced Income Tax Procedures.* Interpretation of federal income tax laws; rules and regulations applicable to partnerships, corporations, reorganizations, fiduciaries, and gift. Attention given to court decisions and internal revenue procedures. Prerequisite: AC 452. Credit, 2 hours.

532 *Estates, Trusts, and Receiverships.* Accounting principles and procedures applicable to estates, trusts, and receiverships with attention given to legal requirements. Prerequisites: AC 383, 505. Credit, 2 hours.

551 *Advanced Accounting Theory.* Critical analysis of the generally accepted accounting theories and principles. Credit, 2 hours.

560 *C.P.A. Problems.* Complex accounting problems related to accounting theory and auditing, typical of those given in American Institute examinations. Credit, 2 hours.

561 *C.P.A. Problems.* Complex accounting problems related to the cost and governmental accounting fields, typical of those given in American Institute examinations. Credit, 2 hours.

562 *C.P.A. Problems.* Complex accounting problems related to consolidations, mergers, branches, liquidations, and partnerships, typical of those given in American Institute examinations. Credit, 2 hours.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

### Advertising

AD 275 *Advertising Principles.* Advertising as a communications tool in marketing and business management. Consideration of creative methods, survey of media, measurement of effectiveness, and coordination with other aspects of the sales and promotional program. Prerequisite: MK 251 or 1-JO 110. Credit, 3 hours. (Same as 1-JO 275.)



311 *Advertising Campaigns*. Planning and preparation of advertising for the printed media, including newspapers, magazines and direct mail; practice in layout and copy writing; study of typography, printing and photoengraving. Prerequisite: AD 275. Credit, 2 hours.

312 *Advertising Campaigns*. Analysis and selection of printed media; scheduling of advertisements; development and execution of the complete advertising campaign. Prerequisite: AD 275. Credit, 2 hours.

322 *Retail Promotion and Display*. Planning and budgeting of promotional activities in the retail store; preparation of advertising for various media; creation of window and interior displays; coordination of promotion with merchandising and sales efforts. Prerequisites: AD 275; MK 321. Credit, 2 hours.

371 *Radio and Television Advertising*. Techniques and problems of radio and television as advertising media including program selection and planning, preparation of continuity, and coordination with other forms of advertising. Prerequisite: AD 275. Credit, 3 hours. (Same as 1-RT 371.)

401 *Public Relations*. Publicity methods and public relations; representation of business firms and institutions to the public. Includes training on what constitutes newsworthy material and how to communicate it through newspapers, magazines, radio-television stations, and other media. Prerequisite: GB 233 or 1-JO 211. Credit, 2 hours. (Same as 1-JO 401.)

461g *Advertising Management*. A study of advertising planning media selection, and the creation of advertising matter, including preparation of complete advertising campaigns and the solving of typical advertising problems. Prerequisites: MK 303; AD 275. Credit, 3 hours.

472 *Radio-Television Station Management*. Background in the organization, procedures, and policies of radio-television stations. Financial and creative basis of station operation. Consideration of personnel and production problems, relationship with advertising agencies, networks and sponsors. Prerequisites: AD 275 and 1-SE 332 or 1-SE 431. Credit, 3 hours. (Same as 1-RT 472.)

502 *Public Relations Policies*. Case analysis of problems encountered in maintenance of favorable relationships between business organizations and the public; development of sound public relations policies. Credit, 2 hours.

### **Business Education**

BE 480g *Methods of Teaching Business Subjects*. Methods of instruction, organization, and presentation of appropriate content in typewriting, shorthand, bookkeeping, business machines, and basic business courses. Prerequisite: 2-SE 311 or concurrent registration. Credit, 3 hours.

501 *Foundations of Business Education.* The history, philosophy, principles and objectives of business education; problems of curriculum and curriculum evaluation; contribution of business education to general education. Registration subject to approval of instructor. Credit, 2 hours.

511 *Improving Instruction in Typewriting.* An intensive consideration of principles and modern methods in teaching typewriting and of office practices as they relate to typewriting. Registration subject to approval of instructor. Credit, 2 hours.

512 *Improving Instruction in Shorthand and Secretarial Procedure.* Various methods of presenting Gregg shorthand with consideration given to the importance of secretarial procedure. Prerequisite: OA 212 or equivalent. Registration subject to approval of instructor. Credit, 2 hours.

513 *Improving Instruction in Bookkeeping and Accounting.* The latest methods of teaching bookkeeping and accounting and recent surveys in the field of education and business practice. Registration subject to approval of instructor. Credit, 2 hours.

514 *The Work Study Program in the Business Occupations.* To provide preparation for teachers of the work-study program for business occupations. Methods and procedures in developing and co-ordinating a work-study program in the secondary schools and the preparation of materials for instruction. Registration subject to approval of instructor. Credit, 2 hours.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

### Economics

EC 201 *Principles of Economics.* Descriptive analysis of the structure and functioning of the American economy; emphasizes basic economic institutions and the factors determining income and employment levels. Credit, 3 hours.

202 *Principles of Economics.* Price determination and income distribution in a capitalistic economy; investigation of current economic issues with particular emphasis on labor-management relations, agriculture, international trade, and government regulation of business. Prerequisite: EC 201. Credit, 3 hours.

311 *Economics of Income and Employment.* Analysis of determinants of aggregate level of employment, output and income of an economy. Prerequisite: EC 202. Credit, 3 hours.

321 *Labor Economics.* Historical and theoretical analysis of labor problems and labor relations; labor force, wage theories, and practices; employment and unemployment; government regulations. Prerequisite: EC 202. Credit, 3 hours.

331 *Comparative Economic Systems*. Economic theories and practices of capitalism, socialism, communism, and fascism. Prerequisite: EC 202. Credit, 3 hours.

336 *International Economics*. Principles and practices of international finance; economic policies and theory; national incomes; investment and currency problems; international economic and financial organizations. Prerequisite: FI 301. Credit, 2 hours.

351 *Economics of Public Utilities*. Economic, legislative, and administrative problems in the regulation of public utility rates and service standards. Study of public utility costs, pricing policies, rates, plant utilization, and competition. Prerequisite: EC 202. Credit, 3 hours.

401g *Intermediate Price Analysis*. Value and distribution theory; price and output decisions of business firms under conditions of competition, monopolistic competition, oligopoly, and monopoly. Prerequisite: EC 202. Credit, 3 hours.

412g *Business Cycles*. Historical, statistical and analytical study of business cycle theory. Comparison of theories of leading economists. Methods of control of cyclical fluctuations. Prerequisites: EC 311; GB 321 or concurrent registration. Credit, 2 hours.

441g *History of Economic Thought*. Development of economic doctrines; theories of mercantilism, physiocracy, classicism, neo-classicism, Marxism, and contemporary economists. Prerequisite: 12 hours of economics or consent of instructor. Credit, 3 hours.

453g *Government and Business*. Development of public policies toward business; anti-trust activity; economic effects of government policies. Prerequisite: EC 202. Credit, 3 hours.

461g *Current Economic Problems*. Discussion of current economic issues; oral and written reports on assigned topics. Prerequisite: 12 hours of economics or consent of instructor. Credit, 3 hours.

470g *Advanced Economic Analysis*. Value, price, and distribution theories; national income analysis and application to public policy; recent developments in economic theory. Prerequisites: EC 311, 401. Credit, 3 hours.

501 *Managerial Economics*. An approach to management problems from an economic point of view. Includes the application of economic analysis to decision-making in various areas of business policy development. Credit, 2 hours.

## Finance

FI 301 *Money and Banking*. Functions of money, monetary systems, credit functions, banking practices and policies. Prerequisite: EC 202. Credit, 3 hours.

305 *Credits and Collections*. Principles and current practices in the field of commercial credit; organization of the credit department; evaluation of the various sources of credit information, analysis of credit risk. Credit, 2 hours.

325 *Business Finance*. The financial structure of various types of business organizations, including sole proprietorships, partnerships, and corporations. Methods of securing and managing funds to meet short- and long-term capital requirements. Prerequisites: AC 102; GB 101; EC 202. Credit, 3 hours.

331 *Public Finance*. Principles and practices of taxation, public expenditures, credit, budgetary policy. Prerequisite: EC 202. Credit, 3 hours.

441 *Investments*. Analysis and evaluation of various types of securities. Principles of sound investment policy. Prerequisite: EC 202. Credit, 3 hours.

461g *Cases in Business Finance*. Case problems in the financing of business. Analysis of various types of financing. Prerequisite: FI 325. Credit, 3 hours.

501 *Financial Institutions*. Comprehensive analysis of American financial institutions, both private and governmental; their influence upon the operations of the economy; their relationships to the individual enterprise. Extensive reading and intensive analysis of cases. Credit, 2 hours.

542 *Security Analysis*. Investigation of the securities of representative corporations in major industries; analysis of financial statements and of pertinent economic data; security markets; investment management. Prerequisite: FI 501. Credit, 2 hours.

### General Business Administration

GB 101 *Introduction to Business*. The organization, functions, activities, and role of business in the American economic system. Orientation of the student to business terminology, practices, problems, and career opportunities. Not open to students who have received credit in EC 202 and MG 301. Credit, 3 hours.

141 *Mathematics of Business*. A rapid review of the fundamentals of arithmetic will be followed by a study of the mathematical problems ordinarily encountered in business, excluding compound interest and annuities. Credit, 2 hours.

233 *Business Communication*. Mechanics and psychological principles of business letter writing. Correct application of word usage and grammar to business correspondence. Composition of letters of inquiry, reply, application, sales, credit adjustment, and collection. Prerequisites: 1-EN 102, OA 101, or equivalent. Credit, 3 hours.

301 *Mechanized Data Processing*. Key-driven equipment. Punched card accounting machines. Integrated systems using communication channels. Paper tape methods. Credit, 3 hours.

- 302 *Mechanized Data Processing*. Stored program machines. Drum calculators. Large data processors. Input and output equipment. Economics and reliability of storage media. Prerequisite: GB 301. Credit, 3 hours.
- 305 *Business Law*. Contracts, sales, agency, partnerships, corporations, negotiable instruments, personal property, real property, and federal and state regulation of business. Credit, 3 hours.
- 306 *Business Law*. A continuation of 305. Prerequisite: GB 305. Credit, 3 hours.
- 321 *Business Statistics*. Application of basic statistical methods to business problems; sources, classification and tabulation of data; index numbers, graphs, inference, time series, correlation. Prerequisites: EC 202 and 1-MA 105 or 116. Three lectures, 2 hours laboratory. Credit, 4 hours.
- 341 *Transportation*. Survey of transportation systems; facilities, services and policies of carriers; construction and use of tariffs; traffic procedures. Prerequisites: AC 102; GB 101. Credit, 3 hours.
- 401g *Business Systems Analysis*. Sources of information. Rationalization of the report function. Forms design. Flow charts: laying out work for tabulating installation or data processor. Planning controls. Prerequisite: GB 302. Credit, 3 hours.
- 402g *Data Processor Programming*. Typical order codes. Programming techniques: relative addresses, loops, subroutine entries. Debugging programs. Input-output equipment timing. Prerequisite: GB 401. Credit, 3 hours.
- 422g *Statistical Analysis*. Application of advanced statistical techniques to the analysis of business and economic data; emphasis upon inference, multiple correlation, cyclical and seasonal variation, construction of index numbers, and the development of sampling procedures. Prerequisite: GB 321. Credit, 3 hours.
- 431g *Business Report Writing*. The organization and preparation of reports of the types used in business. Techniques of collecting, interpreting, and presenting information useful to management. Prerequisite: GB 233. Credit, 2 hours.
- 451g *Business Research Methods*. Techniques and procedures of general business research, statistical investigation, interpretation and presentation of results, with practical application to actual problems of the business community. Prerequisites: MK 251; GB 321. Credit, 3 hours.
- 455 *Investigation of Business Problems*. Individual study of selected business problems such as resources, labor supply, production organization, finance, and marketing. Prerequisite: Approval of Dean of the College of Business Administration. Hours, arranged. Credit, 1 to 3 hours.
- 590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

593 *Thesis*. Credit, 6 hours.

### Insurance

IN 251 *Principles of Insurance*. Coverage available, buying methods, procedures in settling claims, insurance companies, and vocational opportunities. Prerequisite: GB 101. Credit, 3 hours.

321 *Life Insurance*. A thorough study of life insurance principles. Prerequisite: IN 251. Credit, 3 hours.

331 *Fire and Marine Insurance*. Fire and marine contracts, underwriting, claims, theory, and current practices. Prerequisite: IN 251. Credit, 3 hours.

341 *Casualty and Surety Insurance*. Casualty and surety contracts, underwriting, claims, theory, and current practices. Prerequisite: IN 251. Credit, 3 hours.

425g *Life Insurance, C.L.U.* A study of life insurance principles and practices in preparation for examinations given by The American College of Life Underwriters. Credit, 4 hours.

435g *Fire and Liability Insurance, C.P.C.U.* Advanced study of insurance principles and practices in preparation for examinations given by The American Institute for Property and Liability Underwriters. Credit, 4 hours.

### Management

MG 301 *Principles of Management*. The fundamentals of organization and administration. Planning, organizing, directing, coordinating, and controlling business activity. Prerequisite: GB 101. Credit, 3 hours.

311 *Personnel Administration*. Personnel selection, placement, training, promotion, wage incentives, absenteeism, and counseling. Prerequisite: EC 202 or consent of instructor. Credit, 3 hours.

331 *Industrial Management*. The principal functions, departmental activities, and policies of manufacturing firms. Organization for production and analysis of production methods. Prerequisite: MG 301 or 4-ME 152. Credit, 3 hours.

335 *Methods and Motion Study*. Methods used in developing procedures for effective utilization of effort in industrial operations. Laboratory practice in analyzing job situations. Process charts, operation charts, micro-motion study, principles of motion economy, job standards, and time standards. Fee, \$4.00. Two lectures, 3 hours laboratory. Credit, 3 hours. (Same as 4-IE 321.)

338 *Industrial Safety*. Safety methods in industry. Safety codes, compensation, inspection, safety educational program, industrial facilities to care for injured workmen, health hazards and pro-

tective measures, safeguards on equipment and buildings to prevent accidents. Prerequisite: MG 301. Credit, 2 hours. (Same as 4-IE 331.)

413g *Job Evaluation*. Development of job description and detailed comparison of requirements for jobs within a given organization. Selection procedures to find the individual to meet job requirements. Prerequisite: MG 311. Credit, 2 hours.

422g *Employee Training and Supervision*. A study of the principles of supervision, the techniques of leadership, adjustment of grievances, policy interpretation, group attitude and morale, training and learning processes, and counseling techniques. Prerequisite: MG 311. Credit, 2 hours.

423g *Industrial Relations and Collective Bargaining*. The processes and procedures of collective bargaining. The scope and negotiation of union contracts. Prerequisite: EC 321. Credit, 3 hours.

432g *Production Control*. Production planning and budgeting, development of the production control system, including product development, materials control, plant and equipment analysis, production standards and methods, personnel and supervision; control of production quantity through routing, scheduling, and dispatching; measurement of production efficiency. Prerequisite: MG 331. Credit, 2 hours.

433g *Statistical Quality Control*. The use of statistical techniques in the control of quality of manufactured products. Introduction of probability theory with applications to sampling acceptance procedures. Prerequisite: MG 331 or consent of the instructor. Credit, 2 hours. (Same as 4-IE 471.)

463g *Business Policies*. Analysis of problems encountered by management in its daily operations. Investigation of sound business principles and practices. Prerequisites: MG 301; FI 325. Credit, 3 hours.

491g *Operations Research*. A study of the scientific methods which make available to executive departments, a quantitative basis for decisions regarding the operations under their control. Early development, value, mathematical analysis, methods, personnel, and organization for effective operations research. Credit, 3 hours. (Same as 4-IE 491.)

501 *Management Policies and Procedures*. An analysis of managerial techniques. Evaluation and application of such tools of management as job analysis, merit rating, time and motion study, and the personnel audit. The development of an operating philosophy of management. Credit, 2 hours.

522 *Labor Relations and Public Policy*. The development of state and federal legislation. Analysis of recent decisions of courts and labor bonds. The legal rights and duties of employers, unions, and the public. Credit, 2 hours.

581 *Cases in Industrial Management.* Actual management problems are studied by the case method. Experience in managerial decision making. Credit, 2 hours.

### Marketing

MK 201 *Principles of Selling.* The techniques of personal selling. The analysis, organization, and presentation of sales interviews. Prerequisite: GB 101. Credit, 3 hours.

251 *Principles of Marketing.* Survey of principles and trends. Prerequisite: EC 202 or concurrent registration. Credit, 3 hours.

303 *Marketing Practices.* Practices and problems confronting the marketing executive and the development of techniques found useful in their solution. Prerequisite: MK 251. Credit, 3 hours.

321 *Principles of Retailing.* Survey of store operations including buying, pricing, selling, control, and store services; markup and expense relationships; store organization and system. Prerequisites: MK 251; AC 102. Credit, 3 hours.

332 *Wholesaling.* Organization and function of wholesaling in the marketing channel. Services, price policies, regulation and recent trends. Prerequisite: MK 251. Credit, 2 hours.

334 *Industrial Marketing.* An analysis of the marketing structure for industrial products. Product lines, channels of distribution, selling, pricing, and warehousing problems. Prerequisite: MK 303. Credit, 2 hours.

335 *International Trade.* Principles and practices of international trade; import-export procedures; foreign marketing and financing practices. Prerequisite: MK 251. Credit, 2 hours.

355 *Purchasing.* Practices and problems confronting the purchasing agent, including sources of supply, market information, material specification and inspection, control records, inventories, stores, and the purchase budget. Prerequisites: MK 303; MG 301. Credit, 3 hours.

383 *Marketing Research.* Use of marketing data in solving marketing problems. Determining consumer demand, sales potentials, and quotas. Evaluation and presentation of findings. Prerequisites: MK 251; GB 321. Credit, 3 hours.

411g *Sales Management.* Organization of the sales department; sales planning; selection, training, control, and compensation of the sales forces. Prerequisite: MK 383. Credit, 3 hours.

412. *Sales Promotion Policies.* Analysis of sales appeals. The coordination of personal selling with other types of sales promotion. Methods of developing a clientele, including the locating of new markets. Prerequisite: MK 201. Credit, 2 hours.

423g *Retail Buying and Stock Control.* Buying procedures for retail stores; group buying, central buying, and use of resident



buying offices; inventory methods and systems; dollar control and unit control; merchandise planning and open-to-buy; application of control systems to various types of retail stores. Prerequisite: MK 321. Credit, 2 hours.

424g *Retail Store Management*. Problems of store management including location, layout, customer services, personnel, and operational factors as they affect successful retailing. Prerequisite: MK 321. Credit, 3 hours.

471g *Price Policies*. Relationship of demand, costs, and price to marketing decisions. Evaluation of profit objectives and manipulative techniques relative to demand for both consumer and industrial goods. Prerequisite: MK 251. Credit, 2 hours.

501 *Marketing Management*. Analysis of marketing problems from the management point of view. Credit, 2 hours.

522 *Sales Analysis and Control*. An analytical approach to marketing problems, particularly in the interpretation of findings from sales analysis. Credit, 2 hours.

### Office Administration

OA 101 *Beginning Typewriting*. Mastery of the keyboard and development of speed and accuracy by the touch system. Introduction to tabulation, centering, and business letter typing. Minimum requirement for credit, 25 correct words a minute. Fee, \$2.00. One lecture, 2 hours laboratory. Credit, 2 hours.

102 *Intermediate Typewriting*. The development of skill in office production: business letters, rough drafts, business forms, and manuscripts. Minimum requirement for credit in the course, 50 correct words a minute. Fee, \$2.00. One lecture, 2 hours laboratory. Credit, 2 hours.

111 *Beginning Machine Shorthand*. The basic principles of machine shorthand. Dictation of practiced material. Two lectures, 2 hours laboratory. Credit, 3 hours.

112 *Intermediate Machine Shorthand*. Building dictation speed with unpracticed material and a review of machine shorthand principles. Two lectures, 2 hours laboratory. Credit, 3 hours.

113 *Elementary Gregg Shorthand*. The basic principles of reading and writing shorthand. Dictation of practiced material. Two lectures, 2 hours laboratory. Credit, 3 hours.

114 *Intermediate Gregg Shorthand*. Building dictation speed with unpracticed material, and a review of shorthand principles. Two lectures, 2 hours laboratory. Credit, 3 hours.

143 *Business Machines*. Instruction and practice in addition, subtraction, multiplication, and division on full-key, ten-key, and rotary calculators. Fee, \$2.00. One lecture, 2 hours laboratory. Credit, 2 hours.

201 *Advanced Typewriting*. Building skill in typing practical office problems to meet business production standards. Use of electric machines. Minimum requirement for credit in the course, 60 correct words per minute. Fee, \$2.00. One lecture, 2 hours laboratory. Credit, 2 hours.

211 *Beginning Transcription*. Building skill in taking dictation and transcribing mailable copies. Two lectures, 2 hours laboratory. Credit, 3 hours.

212 *Advanced Transcription*. Increased speed in sustained dictation and the transcription of mailable business correspondence. Two lectures, 2 hours laboratory. Credit, 3 hours.

232 *Records Systems and Filing*. Administration of records systems; analysis and application of various filing systems in the business office. One lecture, 2 hours laboratory. Credit, 2 hours.

331 *Secretarial Procedures*. Instruction and practice in performing various office duties, including methods of handling mail, arranging itineraries, procuring office supplies, using the telephone, and improving human relations. Prerequisite: OA 212. Credit, 3 hours.

344 *Office Appliances*. Instruction in the use of dictating and transcribing machines, duplicating machines, the Varityper, and PBX. The investigation of suitable office equipment for selected uses. One lecture, 2 hours laboratory. Credit, 2 hours.

351 *Principles of Office Management*. Relationship of the office function to the business enterprise including office location and layout, selection of office equipment and supplies, principles of office organization, supervision of office personnel, employee training programs, office services, and control of office output. Credit, 3 hours.

452g *Office Systems and Procedures*. Methods of establishing, analyzing, standardizing, and controlling administrative systems and procedures including: work simplification, forms analysis, work-flow charting, layout and space analysis, office manuals. Prerequisite: OA 351. Credit, 3 hours.

## Real Estate

RE 251 *Real Estate Principles*. The regulations, practices, legal aspects, and professional ethics of the real estate business. Prerequisite: EC 202. Credit, 3 hours.

272 *Hotel Administration*. Introductory course in hotel and motel management. A study of hotel and motel services and general layout, needs and expectations of guests, duties of the front office, purchasing, preparation and service of food, housekeeping, engineering, credit and collections, promotion and public relations. Credit, 2 hours.

302 *Real Estate Management.* Management of residences, apartments, and commercial properties. Consideration of professional standards, methods of business promotion, leasing, insuring, and maintaining properties as an agent of the owners. Prerequisites: AC 102; RE 251. Credit, 3 hours.

331 *Real Estate Appraisal and Finance.* Theory and practice of the appraisal process. Taxation and insurance appraisals, mortgages, financing, and problems in valuation. Prerequisite: RE 251. Credit, 3 hours.

372 *Front Office Procedure for Hotels and Motels.* Control procedures applicable to proper hotel and motel administration, guest histories and control, inventory control, supervision of front office personnel. Prerequisites: AC 102; RE 272. Two lectures per week supplemented by field trips. Credit, 2 hours.

373 *Front Office Control for Hotels and Motels.* A continuation of RE 372. Prerequisite: RE 372. Credit, 2 hours.

411g *Real Estate Law.* Legal practices as they apply to the real estate field in general and to the field of titles, mortgages, lending, and trust work in particular. Prerequisites: RE 302; GB 306. Credit, 3 hours.

441g *Real Estate Land Development.* Neighborhood and city growth; municipal planning and zoning; development of subdivisions; agricultural land utilization. Prerequisites: EC 202; RE 411 or equivalent. Credit, 3 hours.

461g *Current Real Estate Problems.* Recent developments in the field of real estate, finance, taxation, zoning, planning, government regulations, and government assistance programs. Prerequisite: RE 302, or equivalent. Credit, 3 hours.

472g *Hotel Policies and Problems.* Discussions of problems of current importance to hotel and motel management. Lectures supplemented by case problems and field trips. Prerequisite: RE 373 or permission of instructor. Credit, 2 hours.

## Chemistry

BATEMAN (Head, Division of Physical Sciences and Chairman, Department of Chemistry), BROWN, BURGOYNE, CROWLEY, FUCHS, ROBINS, JOYCE WILCOX, YUEN, ZASLOW.

### Chemistry

CH 111\* *Elementary Chemistry.* The principles of general chemistry. Primarily for students in agriculture, home economics, nursing, biology, physical education, etc. After completing this course, students may take CH 231; or, with permission of instructor, CH 115. Fee, \$4.00. Three lectures, 1 quiz, 2 hours laboratory. Credit, 4 hours.

\*In each of the following groups credit is allowed for one course only; CH 111, 113; CH 231, 331; CH 341, 441.

- 113\* *General Chemistry*. Fundamental principles of chemistry. Prerequisite: MA 116 or high school equivalent. Fee, \$4.00. Three lectures, 1 quiz, 2 hours laboratory. Credit, 4 hours.
- 114\* *General Chemistry*. Chemistry of metals, nonmetals, and carbon. Prerequisite: CH 111 or 113. Fee, \$4.00. Three lectures, 1 quiz, 2 hours laboratory. Credit, 4 hours.
- 115\* *General Chemistry and Qualitative Analysis*. Continuation of CH 113. Qualitative separation and identification of common cations and anions. Prerequisite: CH 113 or equivalent. Fee, \$5.00. Three lectures, 2 quizzes, 4 hours laboratory. Credit, 5 hours.
- 221 *Qualitative Analysis*. Principles and methods of separation of the common cations and anions. Prerequisite: CH 115. Fee, \$5.00. Two lectures, 1 quiz, 5 hours laboratory. Credit, 4 hours.
- 225 *Quantitative Analysis*. Fundamental principles of volumetric and gravimetric analysis. Prerequisites: CH 115 and algebra. Fee, \$6.00. Two lectures, 1 quiz, 5 hours laboratory. Credit, 4 hours.
- 226 *Quantitative Analysis*. Continuation of CH 225. Prerequisite: CH 225. Fee, \$6.00. Credit, 4 hours.
- 231\* *Elementary Organic Chemistry*. Survey of the compounds of carbon, including representative groups of aliphatic and aromatic series. For students of home economics, agriculture and biology. Prerequisite: CH 111 or 113. Fee, \$4.00. Three lectures, 1 quiz, 2 hours laboratory. Credit, 4 hours.
- 300 *Glass Blowing*. Laboratory techniques in glass blowing. Limited to science majors. Fee, \$6.00. Four hours laboratory. Credit, 1 hour.
- 331\* *General Organic Chemistry*. Chemistry of organic compounds. Prerequisite: CH 225. Fee, \$5.00. Three lectures, 3 hours laboratory. Credit, 4 hours.
- 332 *General Organic Chemistry*. Continuation of CH 331. Prerequisite: CH 331. Fee, \$7.00. Credit, 4 hours.
- 341\* *Elementary Physical Chemistry*. Properties of solids, liquids, gases, solutions, equilibrium, colloidal state. For premedical, biology, agriculture, etc. students. Prerequisites: CH 225 and 231 or 331. Fee, \$5.00. Three lectures, 3 hours laboratory. Credit, 4 hours.
- 351 *Inorganic Chemistry*. Survey of chemical bonding, aqueous and non-aqueous chemistry and periodic relationships. Prerequisite: CH 225 or equivalent. Credit, 3 hours.
- 421g *Instrumental Analysis*. Advanced analysis utilizing instruments in qualitative and quantitative determinations. Prerequisite: CH 225 or equivalent. Credit, 4 hours.
- \*In each of the following groups credit is allowed for one course only: CH 111, 113; CH 231, 331; CH 341, 441.

sites: CH 226 and 332; PH 112. Fee, \$6.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

425 *Metallurgy*. Basic laws of thermodynamics applied to metallurgy; constitution diagrams. Prerequisite: 4-ES 351. Credit, 3 hours. (Same as 4-ES 452.)

431g *Qualitative Organic Analysis*. Systematic identification of organic compounds. Prerequisite: CH 332. Fee, \$7.00. One lecture, 6 hours laboratory. Credit, 3 hours.

435g *Organic Preparations*. The more important synthetic methods of organic chemistry. Yields and purity of product emphasized. Prerequisite: CH 332. Fee, \$8.00. One conference, 5 hours laboratory. Credit, 2 hours.

441g\* *General Physical Chemistry*. Includes gases, liquids, solids, solutions, equilibrium, phase rule, electrochemistry, thermodynamics, atomic structure, radioactivity, and colloids. Prerequisites: CH 225; PH 112; MA 121. Fee, \$5.00. Three lectures, 1 three-hour laboratory period. Credit, 4 hours.

442g *General Physical Chemistry*. Continuation of CH 441. Prerequisite: CH 441. Fee, \$5.00. Credit, 4 hours.

447g *Radiochemistry*. Fundamentals of radioactivity, natural and artificial radio-isotopes, nuclear reactions, isolation of isotopes, nuclear energetics, measurement of radioactivity, tracer techniques, and other applications. Prerequisite: CH 442 (or concurrently). Three lectures. Credit, 3 hours.

452g *Inorganic Chemistry Laboratory*. Preparation and purification of typical inorganic substances with emphasis on methods and techniques. Prerequisite: Consent of instructor. Fee, \$6.00. One lecture, 3 hours laboratory. Credit, 2 hours.

464g *Biochemistry*. Chemistry of animal and plant life including biological compounds, tissues, foods and digestion, enzymes, etc. Prerequisite: CH 231 or 332. Three lectures. Credit, 3 hours.

465g *Biochemistry Laboratory*. Qualitative and quantitative chemistry of carbohydrates, fats, proteins, enzymes; milk, blood and urine analysis. Prerequisite: consent of instructor. Fee, \$6.00. Three hours laboratory. Credit, 1 hour.

471g *Applied Chemistry*. Applications of chemistry to agriculture, mining, water, sanitation, and fuels. Prerequisite: CH 231 or 332. Credit, 3 hours.

525 *Optical Methods of Chemical Analysis*. Theoretical and practical considerations involving the use of optical instruments for chemical analysis with special emphasis on emission and absorption spectroscopy. Prerequisite: CH 442. Fee, \$6.00. Two conferences, 3 hours laboratory. Credit, 3 hours.

\*In each of the following groups credit is allowed for one course only: CH 111, 113; CH 231, 331; CH 341, 441.

526 *X-Ray Diffraction*. Theoretical and practical considerations involving the use of x-ray diffraction techniques for chemical and structural analyses. Prerequisite: CH 442. Fee, \$8.00. Two conferences, 3 hours laboratory. Credit, 3 hours.

533 *Organic Chemistry*. An advanced course in the principles of organic chemistry. Prerequisite: CH 332. Credit, 3 hours.

534 *Organic Chemistry*. Stereoisomerism, carbohydrates, terpenes, nitrogen heterocyclics. Prerequisites: CH 331, 332. Credit, 3 hours.

543 *Electrochemistry*. Reversible and irreversible processes in electrochemistry. Electromotive force of cells, activity coefficients, electrolytic conductance, corrosion, electrolysis, and overvoltage phenomena. Prerequisite: CH 442. Two lectures, 3 hours laboratory. Credit, 3 hours.

545 *Physical Chemistry*. Classical kinetic theory, statistical mechanics, thermodynamics, chemical kinetics in gases and in solutions, and catalysis. Prerequisite: CH 442. Credit, 3 hours.

546 *Physical Chemistry*. Continuation of CH 545. Credit, 3 hours.

547 *Quantum Chemistry*. Development of principles of quantum theory with survey of approximation methods as applied to chemical problems. Two lectures. Credit, 2 hours.

563 *Biochemistry*. Chemistry of biologically important compounds and their transformations in plants and animals. Prerequisite: CH 464. Credit, 3 hours.

590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

593 *Thesis*. Credit, 6 hours.

### Medical Technology

The following courses are offered in the laboratories at St. Joseph's, Good Samaritan, and Memorial Hospitals in Phoenix and are open only to seniors taking the Medical Technology curriculum. See pages .

ME 411 *Clinical Medical Technology*. Clinical training in pathogenic bacteriology, biology techniques, histology, serology, parasitology, hematology, biochemistry, blood chemistry, urinalysis, and chemistry of digestion. Fee, \$25.00 (payable at hospital). Credit, 16 hours.

412 *Clinical Medical Technology*. Continuation of ME 411. Fee, \$25.00 (payable at hospital). Credit, 16 hours.

In each of the following groups credit is allowed for one course only: CH 111, 113; CH 231, 331; CH 341, 441.

## Education

McGRATH (Dean, College of Education), ABBOTT, ABRAHAM, M.  
ANDERSON, ASHE, AUSTIN, R. L. BAKER, BARNES, BELL, BENEDICT,  
NELL BYERS, COOPER, DAVIS, J. ERICKSON, FIELDING, FRENCH,  
GAFFNEY, HEIMANN, K. HOOVER, JELINEK, M. LEWIS,  
MANNING, MENKE, MILLS, PODLICH, RALSTON, ROY RICE,  
H. D. RICHARDSON, ROVER, SHOEMAKER, STAFFORD,  
STOUT, VERGIS, WEISS, WOCHNER.

### Kindergarten-Primary Education

KP 211 *Techniques in Story Telling*. The art of story telling, preparation, adaptation, creative writing. Emphasis upon and practice in story telling to young children. Prerequisite: EE 211. Credit, 2 hours.

322 *Construction Activities in the Kindergarten-Primary School*. The unit method of teaching with emphasis on creative instructional materials of all kinds used in the integrated experience program. Covers first half of school year. Credit, 3 hours.

323 *Construction Activities in the Kindergarten-Primary School*. Continuation of KP 322, second half of school year. Credit, 3 hours.

344 *Plays and Games for the Kindergarten-Primary School*. Creative and traditional plays and games. A study of types, and actual playing of games for analysis and evaluation. Credit, 3 hours.

355 *Reading and Language Arts in the Kindergarten-Primary Grades*. Emphasis on all phases of the language arts program in the kindergarten-primary grades. The philosophy and techniques of developmental reading and the areas of oral expression, creative writing, manuscript and cursive writing, and listening are included. Required of and open only to kindergarten-primary students. Credit, 6 hours.

366 *Kindergarten-Primary Curriculum and Teaching Problems*. The philosophy, principles, and practices of kindergarten-primary education; discusses all phases of the curriculum. Includes observations in nearby schools. Prerequisites: KP 322, 344, 355, or approval of instructor. Fee, \$3.00. Three hours class, 3 hours observation a week. Credit, 4 hours.

417 *Directed Teaching in the Kindergarten-Primary School*. The relationship of theory and practice in methods of teaching; the practice of teaching; practice in guidance, measurement, extra-curricular activities, and classroom management procedures. Credit, 6-10 hours.

428 *Problems of Teachers in the Kindergarten-Primary School*. The study of individual problems encountered by students in their observations and practice teaching experiences; appraisal of teacher-education backgrounds; bridging of gaps in teacher-education backgrounds. Prerequisite or co-requisite: KP 417. Credit, 3 hours.

522 *Practices and Techniques in Construction Activities.* The place of construction materials and their function in the learning process. Experiences with diversified materials in terms of the specific needs of the teacher in the classroom situation. Credit, 3 hours.

533 *Play Education.* Treatment at an advanced level of the philosophies of play. Practical application to the utilization of rhythms, plays, and games. Credit, 3 hours.

544 *Reading and Language in the Kindergarten-Primary Curriculum.* Practical suggestions for meeting the reading needs encountered in teaching on the primary level. Special emphasis on diagnosis of unique problems faced by teachers in the reading and language arts program. Prerequisites: EE 322, 333, or KP 355 or equivalent. Credit, 3 hours.

555 *Modern Practices in the Kindergarten-Primary School.* Practices, materials, and policies with emphasis on curriculum trends, methods of instruction, pupil-teacher and teacher-parent relationships. Prerequisites: KP 366; EE 344, or the equivalent. Credit, 3 hours.

566 *The Kindergarten Movement.* Development of the kindergarten; foreign influences contributing to its establishment; early pioneers; progressive techniques in kindergarten practice. Credit, 3 hours.

577 *Planning, Organizing, and Establishing Kindergartens.* Practical steps for inaugurating a kindergarten program. Credit, 3 hrs.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

791 *Seminar.* Credit, 3 hours.

### **Elementary Education**

EE 211 *Children's Literature.* Folk and modern literature for elementary school children; a study of types; wide reading. Credit, 3 hours.

322 *Language Arts in the Lower Elementary Grades.* Foundations of a developmental reading program for elementary majors. Integrated treatment of speaking, listening, manuscript writing, reading, creative writing, and spelling. Credit, 3 hours.

333 *Language Arts in the Upper Elementary Grades.* A continuation of the developmental reading program for elementary majors. Integrated treatment of study and recreatory types of reading, listening, speaking, cursive writing, spelling, creative and formal type writing. Credit, 3 hours.



344 *Elementary Curriculum*. Curriculum types or designs, social studies in curriculum. Curriculum principles, practices, and problems. Credit, 3 hours.

345 *Social Studies in the Elementary School*. The core function of social studies, scope and sequence, unit organization, methods of instruction, materials and resources for learning. Credit, 3 hours.

356 *Observation and Participation in the Elementary School*. This course provides an opportunity for students to observe and work directly with elementary children in a classroom situation. It includes a critical evaluation of the student's experiences. Credit, 3 hours.

456g *Construction Activities in the Elementary School*. Use of textiles, paper, wood, paint, leather, plastics, and salvage materials. Experience in working with materials available to pupils in typical elementary school classrooms. Guidance in directing construction activities related to total instructional program. One lecture, 3 hours laboratory. Credit, 2 hours.

478 *Directed Teaching in the Elementary School*. The relationship of theory and practice in methods of teaching; the practice of teaching; practice in guidance, measurement, extra-curricular activities, and classroom management procedures. Credit, 6-10 hours.

489 *Problems of Teachers in the Elementary School*. The study of individual problems encountered by students in their observations and practice teaching experiences; appraisal of teacher-education backgrounds; bridging of gaps in teacher-education backgrounds. Prerequisite or co-requisite: EE 478. Credit, 3 hours.

511 *Elementary Curriculum Development*. Criteria of appraisal, typical curriculum problems, curriculum construction and improvement. Prerequisite: EE 344, or equivalent. Credit, 3 hours.

522 *Reading Problems at the Elementary School Level*. Practical suggestions for meeting the reading and language problems encountered in teaching at elementary school levels are treated with diagnosis of unique problems faced by members taking the course. Prerequisite: EE 322, 333 or KP 355 or equivalent. Credit, 3 hours.

533 *Evaluation of Children's Literature*. Social and educational concepts expressed in literature and changes in values and principles that are needed. Prerequisite: at least one course in literature. Credit, 3 hours.

590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

593 *Thesis*. Credit, 6 hours.

791 *Seminar*. Credit, 3 hours.

## Secondary Education

SE 311 *Methods of Teaching and Evaluating in the Secondary School*. The study of procedures, methods, techniques, and instruments of teaching; and evaluating in secondary schools. Prerequisites: BE 111, 222 and 333. Credit, 4 hours.

422g *Driver Education*. The preparation of instructors for the secondary school. Includes the study of the automobile, Arizona laws pertaining to motor vehicles, and behind-the-wheel instruction. Prerequisites: BE 444 and a valid driver's license. Fee, \$7.50. Lectures and laboratory. Credit, 2 hours.

433 *Directed Teaching in the Secondary School*. The study of the relationship of theory and practice in methods of teaching; practice of teaching; practice in guidance, measurement, extra-curricular activities, and classroom management procedures. Prerequisites: BE 333 and SE 311. Credit, 6-10 hours.

444 *Principles and Curricula of Secondary Schools*. The study of principles, functions, objectives, curricula, problems, and trends in secondary education, and the study of individual problems encountered by students in their teacher-education courses and their practice-teaching experiences. Prerequisites: SE 311 and 433. Credit, 3 hours.

511 *The Junior High School*. The study of the development, population, organization, curriculum, purposes and methods of the Junior High School, with a major emphasis upon curriculum. Prerequisites: SE 311, 433, and 444. Credit, 3 hours.

522 *Secondary School Curriculum Development*. The study of the social processes, issues, principles, patterns, and procedures in curriculum development. Prerequisites: SE 311, 433, and 444. Credit, 3 hours.

533 *The Improvement of Instruction in the Secondary School*. The study of principles of teaching in terms of the interests and needs of individuals and groups in the class. Prerequisites: SE 311, 433, and 444. Credit, 3 hours.

544 *Reading Problems in the Secondary School*. The study of methods for meeting the reading and language problems encountered by junior and senior high school pupils. Prerequisites: SE 311, 433, and 444 or undergraduate major in elementary education. Credit, 3 hours.

555 *Student Activities in the Secondary School*. A study of all phases of an "extracurricular" program including the development, purposes, and principles of student activities concerned with school publications, student participation in government, athletics, clubs, and others, as they are related to the educational program of the secondary school. Prerequisites: SE 311, 433, and 444. Credit, 3 hours.

711 *Problems in Secondary Curriculum Development.* The analysis of factors bearing upon the development of a qualitative learning environment in the secondary school; the evaluation of research and the individual study of fundamental problems in secondary curriculum development. Prerequisites: SE 433, 444, and 522. Credit, 4 hours.

722 *Problems in the Improvement of Instruction in the Secondary School.* The analysis of factors bearing upon the improvement of instruction in the secondary school; the evaluation of research and the individual study of fundamental problems in the improvement of instruction in the secondary school. Prerequisites: SE 311, 433, and 533. Credit, 4 hours.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

791 *Seminar.* Credit, 3 hours.

### Adult Education

AE 511 *Adult Education.* Attention focused upon the historical development, objectives, scope, trends, and significance of adult education. Examination of the philosophy and trends of adult education in relation to desirable present and future local public school programs. Credit, 3 hours.

711 *Adult Education.* Study of existing types, methods, and administration of adult programs. Emphasis is given to ways and means of implementing adult activity and to the use of adult activity in the study and improvement of educational services provided in local communities. Each student will participate in a research study of some area of adult education. Prerequisite: AE 511. Credit, 4 hours.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

791 *Seminar.* Credit, 3 hours.

### Higher Education

HE 511 *Higher Education in the United States.* Designed for the graduate student interested in the organization and structure of higher education. Involves study of purposes, programs, issues, trends, controls, and personnel. Credit, 4 hours.

522 *The Junior College.* The study of the development, population, organization, curriculum, purposes, and methods of the Junior College, with a major emphasis upon methods of teaching. Prerequisites: SE 311, 433, and 444. Credit, 3 hours.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

791 *Seminar.* Credit, 3 hours.

### School Administration and Supervision

SA 411g *Supervision of Instruction.* The growth and development of modern supervisory concepts. The nature of supervisory principles and practices. Structural and administrative organization of supervision. Problems of supervision, and the evaluation of supervisory functions as related to the role of the military supervisor. Primarily for military personnel. Credit, 3 hours.

511 *Public School Curriculum Improvement.* Analysis of general principles and criteria effective in formulating curriculum practices. Emphasis upon administrative and supervisory aspects of curriculum construction and improvement in local school systems. Prerequisite: EE 344 or SE 444. Credit, 2 hours.

522 *Public School Administration.* A general course in the organization and administration of public education. Emphasis given to all major phases of school administration. Credit, 3 hours.

533 *Public School Supervision.* Study of principles, types, aims, procedures, and evaluation in educational supervision. Emphasis given to thorough analysis of practices in public school supervision. Prerequisite or co-requisite: SA 522. Credit, 2 hours.

544 *Public School Finance.* Study of methods and problems of financing public education and current problems in school support. Initial study given to the preparation of the school budget and financial accounting systems for use in schools. Prerequisite or co-requisite: SA 522. Credit, 2 hours.

555 *School House Planning and Maintenance.* Includes the survey of school-building needs, the educational planning of public school buildings, the equipping and the maintenance of school buildings. Prerequisite or co-requisite: SA 522. Credit, 3 hours.

566 *School-Community Relationships.* A study of principles, philosophy, and techniques for improving the educational program through school-community action. Special attention given to the role of the school administrator in coordinating school-community experiences. Credit, 2 hours.

568 *Supervision of Student Teaching.* Designed to provide experiences and content for those planning to become supervisors of student teaching in teacher education programs. Also serves as in-service training for those already working in student teaching. Credit, 2 hours.

571 *School Budget Preparation and Control.* Principles and techniques of budgetary preparation and control relative to financial accounting, auditing, reporting, and management of property and supplies. Prerequisites: SA 522, 544. Credit, 3 hours.

573 *School Personnel Administration.* A study of desirable administrative policy to govern selection, placement, transfer, welfare, remuneration, and morale of teaching and non-teaching personnel. Prerequisite: SA 522. Credit, 3 hours.

575 *Arizona School System, Laws, and Records.* Analysis of the legal provisions for Arizona's school districts, Arizona school laws, the general concept of school law, and the court's responsibility for interpreting the laws. Credit, 2 hours.

577 *Functions of the Principal.* Problem and laboratory approaches used to provide application of administrative principles and procedures to the administrative activities of school principals. Attention given to the functions of both elementary and secondary school principals. Prerequisites: SA 522 and 6 additional hours in educational administration. Credit, 3 hours.

579 *Administration of the Junior College.* A study of the organization and administration of junior colleges with special emphasis upon procedures, practices, and problems encountered in their operation. Prerequisite: HE 522. Credit, 2 hours.

711 *The Administrator and School Community Planning.* A study of the various basic areas of school-community integration and improvement; applications made in school surveys, finance, evaluation of school systems, and cooperative development of local school systems. Prerequisite: SA 566. Credit, 4 hours.

722 *Leadership in School Administration.* A study of the processes and conditions contributing to administrative leadership. Attention given to the application of administrative leadership in all aspects of a school systems operation, with major emphasis upon curriculum improvement. Study of major researches and participation in a research project. Prerequisite: SA 511, and nine additional hours in educational administration. Credit, 4 hours.

733 *Instructional Improvement Through Constructive Supervision.* Organization, personnel, and procedures involved in upgrading instruction through supervisory practices. Democratic theory, creative school control, and supervisor-teacher relationships emphasized. Study of major researches and participation in a research project. Prerequisite: SA 533. Credit, 4 hours.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

593 *Thesis*. Credit, 6 hours.

791 *Seminar*. Credit, 3 hours.

### Audio-Visual Education

AV 411g *Audio-Visual Aids in Education*. Principles underlying the selection and use of materials for instructional purposes. Laboratory experiences include the operation of equipment and the selection, preparation, and evaluation of audio-visual materials. One hour class, 3 hours laboratory. Credit, 2 hours.

422g *Radio and Television in Education*. For students and teachers interested in making more effective use of radio and television broadcasts in the classroom situation. Designed to acquaint teachers with the possibilities available and the means of adapting materials for learning experiences. Credit, 2 hours.

511 *Photography in Public Education*. A laboratory course in the fundamentals of photography and darkroom procedure. For the teacher who wishes to use photography in preparing instructional materials. Fee, \$10.00. One hour class, 3 hours laboratory. Credit, 2 hours.

522 *Production of Audio-Visual Aids*. Making of photographs, slides, filmstrips, motion pictures, and recordings. Preparation of scripts. Technical problems of production. Prerequisite: AV 511. Fee, \$10.00. One hour class, 3 hours laboratory. Credit, 2 hours.

533 *Administration of Audio-Visual Aids Programs*. The qualifications and duties of the director, preparing the budget, buying equipment, handling materials, in-service training, and evaluation of the program. Credit, 2 hours.

590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

593 *Thesis*. Credit, 6 hours.

### Social Foundations

SF 411g *History of Education*. The social life, ideas, and institutions that gave direction to western education. A background for understanding and evaluating present educational and social problems. Credit, 3 hours.

422g *Educational Sociology*. A study of education in relation to social institutions. Considers methods of gathering data in social research, the family, problems of educational reconstruction, social relationships, and social measurements. Credit, 3 hours.

433g *Philosophy of Education*. An introduction to the philosophical and social foundations of education, including an analysis of the significance of contemporary social issues, and of the implications of the various interpretations of democracy, for the development of a guiding philosophy for the modern school. Credit, 3 hours.

511 *School and Society*. An analysis of the interrelationship of school and society and the place of education in social change. Prerequisites: SF 433 or one from KP 428; EE 489; SE 444. Credit, 3 hours.

522 *Education and Democratic Values*. A consideration of education as a moral enterprise in which the school seeks to cultivate selected values by the subject matter and methods it employs in its program. Prerequisites: SF 433, or one from KP 428; EE 489; SE 444. Credit, 2 hours.

533 *Comparative Education*. A study of contemporary education in other lands with implications for the United States educational structure. Prerequisites: SF 433, or one from KP 428; EE 489; SE 444. Credit, 2 hours.

544 *Philosophic Foundations of Education*. An examination of the major points of view in contemporary educational thought, with considerable emphasis on the basic issues in general philosophy which are foundational to philosophies of education. Prerequisites: SF 433, or one from KP 428; EE 489; SE 444. Credit, 3 hours.

555 *Education Classics*. An analysis of some major philosophies of education from the past for the purpose of finding useful suggestions for dealing with present educational problems. Prerequisites: SF 433, or one from KP 428; EE 489; SE 444. Credit, 2 hours.

711 *Historical and Social Foundations*. A study of institutions, human relations, and social forces influencing the nature of educational problems current in American society. Significant cultural trends are treated from local, national, and international perspective. Prerequisite: SF 544. Credit, 4 hours.

590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

593 *Thesis*. Credit, 6 hours.

791 *Seminar*. Credit, 3 hours.

### Special Education

SP 311 *Orientation to Education of Exceptional Children*. Survey of exceptional child categories, including gifted, mentally retarded, sight, hearing, speech, emotionally disturbed, and others. This

orientation will include observation of exceptional children in classroom situations. Credit, 3 hours.

511 *Workshop in Education of the Exceptional Child.* Study of exceptional children, consisting of the following groups: Mentally retarded; gifted; emotionally maladjusted; visual, speech, and hearing handicaps; orthopedically handicapped; bilingual; others. The workshop method is followed, including the participation of consultants and speakers, films, other audio-visual aids, visits to appropriate schools and other institutions, and cooperation with organizations working in these fields. Credit, 6 hours.

522 *Experience in Exceptional Child Clinics.* Provides experience with exceptional children in cooperating clinics, organizations, and institutions in Arizona which work with mentally retarded, orthopedic, sight, speech, hearing, bilingual, and other areas in special education. Pre-registration necessary. Prerequisite: SP 511 and teaching experience. Credit, 6 hours.

533 *Curriculum for and Methods of Teaching the Bilingual Child.* An introduction to the study of Spanish-American and Indian children, including their educational needs, materials and methods appropriate to their backgrounds and language problems. Credit, 3 hours.

544 *Curriculum for and Methods of Teaching the Orthopedically Handicapped Child.* An introduction to orthopedically handicapped children, including their needs and characteristics, appropriate materials and teaching methods, teacher qualifications, educability, definitions, and terminology. Among the specific categories to be covered in this course are children with orthopedic, cardiac, tubercular, and glandular handicaps. Credit, 3 hours.

555 *Curriculum for and Methods of Teaching the Child with Hearing Problems.* An introduction to children with hearing disabilities of either a partial or complete nature, including their needs and characteristics, appropriate materials and teaching methods, teacher qualifications, educability, definitions, and terminology. Study of the hearing-handicapped child in the regular classroom situation and in special classes. Credit, 3 hours.

566 *Curriculum for and Methods of Teaching the Sight Handicapped Child.* An introduction to sight handicapped children, including their needs and characteristics, appropriate materials and teaching methods, teacher qualifications, definitions, and terminology. Credit, 3 hours.

577 *Curriculum for and Methods of Teaching the Mentally Retarded Child.* An introduction to the educational needs of mentally retarded children, appropriate materials and methods, teacher qualifications, educability, and special problems. Credit, 3 hours.

588 *Curriculum for and Methods of Teaching the Gifted Child.* An introduction to gifted children, including their needs and characteristics, appropriate materials and methods, and teacher



qualifications. Emphasis is placed on the techniques and values related to acceleration, enrichment, and special classes, and to the research of Terman, Hollingworth, Witty, and others. Credit, 3 hours.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

### Educational Psychology

EP 411g *Educational Measurements and Evaluation.* Evaluation techniques and group tests of ability and achievement with special emphasis upon the interpretation and use of test results in the improvement of instructional and administrative procedure. Credit, 3 hours.

422 *Educational Psychology.* An analysis and application of psychological facts and laws particularly relevant to the problems of education. Prerequisite: 1-PY 100. Credit, 3 hours. (Same as 1-PY 371.)

511 *Advanced Educational Psychology.* The psychological basis of education; development of human abilities; individual differences; the relationship of school activities to personality development; and introduction to learning and transfer of training. Prerequisite: BE 333. Credit, 3 hours. (Same as 1-PY 572.)

522 *Directed Learning.* Theories of learning and experimental investigations in the field of human learning, with special emphasis on their applications to teacher-learning situations in the school. Prerequisite: EP 511. Credit, 3 hours.

533 *Analysis and Interpretation of Quantitative Data.* This course develops an understanding of statistical tests of significance and emphasizes measures of relationship. Specific attention is given to such topics as elementary probability theory, chi-square, introduction of small sample theory, multiple, partial, biserial, tetrachoric, curvilinear correlation, and regression equations, with special reference to their use in prognosis. Prerequisite: 1-PY 492. Credit, 3 hours.

544 *Appraisal and Evaluation Techniques.* Factors involved in the construction of tests—formal and informal, old and new types. Practice in discovering and formulating objectives and in constructing techniques for ascertaining the extent of achievement of these objectives. Prerequisites: EP 411 and 1-PY 492, or equivalent. Credit, 3 hours.

555 *Statistical Inference and Experimental Design.* Computation procedures and interpretation of advanced statistical designs and techniques; analysis of variance, linear and non-linear regres-

sion, discriminant analysis, analysis of co-variance, appropriate statistical methods for analyzing educational data. Prerequisite: EP 533. Credit, 3 hours.

566 *Recent Studies in Educational Psychology*. A critical psychological analysis of school activities emphasizing what the literature has to say about application of current personality theory to the educative process. Prerequisite: Six hours of Educational Psychology. Credit, 3 hours.

590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

593 *Thesis*. Credit, 6 hours.

791 *Seminar*. Credit, 3 hours.

### Guidance and Counseling

GC 511 *Basic Course in Guidance*. An introduction to the areas of guidance with consideration of the interrelation of the various guidance services found in schools. Prerequisite to other courses in the guidance sequence. Credit, 3 hours.

522 *Guidance Testing*. Examination and evaluation of standardized tests and application of their use in vocational counseling. Theories of vocational choice and consideration of factors involved in vocational counseling. Prerequisite or co-requisite: GC 511. Credit, 3 hours.

533 *Educational and Occupational Information*. Selection, utilization, and evaluation of educational and occupational information materials. Familiarization with standard labor market data and materials, and sources of information concerning training opportunities. Prerequisite or co-requisite: GC 511. Credit, 2 hours.

544 *Analysis of the Individual*. Nature and use of guidance techniques employed in the appraisal of the individual, including the interview, observation, rating scales, records and reports, autobiographies and other personal documents, case study, and case conference as applied to the secondary school. Prerequisite or co-requisite: GC 511. Credit, 3 hours.

555 *Techniques of Child Study*. Nature and use of guidance techniques employed in the appraisal and study of children, including tests, interviews, inventories, records and reports, observations, rating scales, and the case study. Prerequisite or co-requisite: GC 511. Credit, 3 hours.

566 *Group Guidance*. Principles and techniques of guidance through the homeroom, orientation courses, co-curricular activities, and the classroom. Prerequisites: GC 511, 555 or 522, 544. Credit, 3 hours.

577 *Counseling*. Intensive individual studies of normal youth in a school setting, and application of principles, methods, and techniques of counseling with them. Prerequisite or co-requisite: GC 511, 555 or 522, 544. Credit, 3 hours.

578 *Organization and Administration of Guidance Programs*. Organizational procedures and patterns, and administrative relationships of school personnel functioning in the guidance program. Prerequisites: At least three of the following courses: GC 511, 555, 577 or 533, 544, 566. Credit, 2 hours.

579 *Supervised Practice in Guidance*. Actual assignment in a public school guidance program and opportunity for real experience under supervision. Prerequisite: Consent of instructor. Credit, 2-6 hours.

590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

593 *Thesis*. Credit, 6 hours.

791 *Seminar*. Credit, 3 hours.

792 *Research*. Credit, 3 hours.

### Research and Surveys

RS 511 *Public School Surveys*. The history and development of public school surveys, with a critical study of current practices, trends, and objectives. Practical experience provided in collecting and preparing survey data. Prerequisite: SA 522 and six additional hours in school administration. Credit, 2 hours.

622 *Field Work and Surveys*. Observation and participation in work-study programs in selected schools. Available in guidance administration and supervision, secondary education, or elementary education. Prerequisite: Consent of doctoral adviser. Credit, 4 hours.

700 *Research Methods*. Advanced procedures of research in education; special techniques and investigations in selected educational fields. Credit, 4 hours.

500 *Research Methods*. Credit, 3 hours.

590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

593 *Thesis*. Credit, 6 hours.

791 *Seminar*. Credit, 3 hours.

### Basic Courses in Education

BE 111 *Exploration of the Education Profession.* Historical development of education; role of the school in American culture; the school, its organization and functions; general and professional orientation and student self-appraisal. Credit, 3 hours.

222 *Psychological Foundations of Education.* The study of childhood and youth; physical, motor, intellectual, social, emotional and moral development of students, and the observing, recording, and interpreting of human behavior; functional concepts of learning; modern theories of education. Prerequisite: BE 111. Credit, 3 hours.

333 *Fundamentals of Teaching.* The basic principles of teaching; appraisal of learning and instruction; relationship between instruction and the curriculum; philosophical basis of instruction and the curriculum; observation of teaching practices. Prerequisite: BE 222. Credit, 3 hours.

444g *Safety Education.* Various phases of safety education: home, school, and on-the-job. Emphasis on special interests of class members. Credit, 2 hours.

511 *Internship.* Closely supervised practice in selected schools for graduate students preparing themselves for positions of administrative responsibility. By special arrangement the student may be employed up to half time by the school in which he interns. Prerequisite: Approval of Dean of College of Education. Credit, 3-6 hours.

522 *Curriculum Workshop.* An intensive study of student selected curriculum problems, directed by regular staff and visiting consultants. Recommended for in-service training of teachers, supervisors, and administrators. Credit, 3 or 6 hours.

533 *Conference in Education.* Seminar experiences in special conferences conducted by outstanding leaders in education. Individual conferences, reports, group work, and work on individual problems. Credit, 1-3 hours.

611 *Applied Project in Education.* A written project in the field of specialization. Required of students enrolled in the Ed. S. Program. Credit, 6 hours.

799 *Dissertation.* Ordinarily designed to require two semesters of intensive application to a problem in education. A scholarly piece of work is required. Credit.

791 *Seminar.* Credit, 3 hours.

## Engineering

THOMPSON (Dean, College of Applied Arts and Sciences and Head, Division of Engineering), BEAKLEY, BRADLEY, COBB, CROWLEY, DOUTHIT, KAUFMAN, MERRITT, NUTT, RIESE.

### Chemical Engineering

KE 211 *Chemical Process Calculations*. Chemical reactions, combustion, conversions, material and energy balances, molal calculations, heat calculations; graphical methods, special methods, and techniques for solving chemical problems. Prerequisites: 1-CH 114; 1-MA 120. Credit, 3 hours.

421 *Chemical Engineering*. Techniques and methods used in chemical process industries. Kinetics and phase laws. Flow of fluids, flow of heat, evaporation, extraction, distillation and gas mass transfer. Prerequisites: 1-CH 332; 1-CH 442. Credit, 3 hours.

422 *Chemical Engineering*. Material handling, transportation and preparation of materials for reaction. Emphasis on phase laws and chemical kinetics. Gas absorption, drying, crystallization, filtration, crushing and grinding. Prerequisite: KE 421. Credit, 3 hours.

441 *Chemical Processes*. Physical and chemical equilibria; chemical reaction kinetics and chemical thermodynamics as applied to the process industries. Prerequisites: 1-CH 332, 1-CH 442, ES 381. Credit, 3 hours.

461 *Economic Factors in Chemical Engineering*. A study of industrial plant problems. Sources of raw materials, natural resources, markets and related factors. Emphasis on project analysis, plant location, fuel and energy, unit operations, patents, sales development, and research policy. Credit, 3 hours.

471 *Electrochemical Engineering*. Theoretical and engineering aspects of electrochemistry as applied to the production of chlorine, caustic, oxygen, hydrogen, etc. Processes for the production of organic and inorganic chemicals. Anodizing, electrolytic condensers, electro-metallurgy, electro-orientation, electrothermics, synthetic abrasives and ceramics. Prerequisite: 1-CH 442. Two lectures, 3 hours laboratory. Credit, 3 hours.

### Civil Engineering

CE 241 *Surveying*. Care, adjustment and use of surveying instruments. General surveying and computations. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

242 *Surveying*. Techniques of using instruments in the field, associated office computations in surveying and laying out of highways, horizontal curves, vertical curves, cuts, fills, borrow pits and haulage. Prerequisite: CE 241. Fee, \$6.00. Two lectures, 4 hours laboratory. Credit, 3 hours.

318 *Engineering Construction*. Contracts, specifications and reports, fundamentals of engineering economy with applications to materials, machines, and construction methods. Basis of design, costs, and estimating. Prerequisite: ES 211. Credit, 3 hours.

339 *Structural Engineering*. Structural engineering; loads, reactions, and force systems; computations of reactions and stresses in beams, bents, arches, and trusses; influence lines and criteria for moving loads; analysis through deflection methods and moment distribution. Prerequisite or concurrent registration: ES 321. Credit, 3 hours.

343 *Surveying*. Topographical surveying, including introduction to plane table, solar observations, etc. Prerequisite: CE 242. One lecture, 6 hours laboratory. Fee, \$6.00. Credit, 3 hours.

351 *Soil Mechanics and Foundations*. Soil mechanics and its application to civil and architectural engineering. Origin, formation, processes, and types of soils are studied. Methods of exploration and soil testing required for the design of foundations, and other engineering structures. Prerequisites: ES 312; 1-GL 321. Two lectures, 3 hours laboratory. Credit, 3 hours.

421 *Structural Design*. Design of members, beams, joints, frames, arches, columns, and indeterminate structures. Prerequisite: CE 339. Two lectures, 3 hours laboratory. Credit, 3 hours.

422 *Structural Analysis*. Analysis of complex and indeterminate structures. Deflections and energy considerations of structures. Study of continuous beams. Use of analogy methods. Two lectures, 3 hours laboratory. Prerequisite: CE 339. Credit, 3 hours.

423 *Concrete Design*. Properties of concrete; reinforced concrete structures; stress considerations; typical designs. Prerequisite: ES 321. Two lectures. 3 hours laboratory. Credit, 3 hours.

441 *Geodesy and Photogrammetry*. Baseline measurement triangulation, fundamentals of geodetic astronomy, field practice in geodetic surveying methods, aerial photography; planning, characteristics, interpretation and applications. Prerequisite: CE 242. Two hours lecture, 3 hours laboratory. Credit, 3 hours.

461 *Sanitary Engineering*. Theory, design and operation of water purification and sewage treatment plants. Collection and disposal of municipal wastes. Two lectures, 3 hours laboratory. Credit, 3 hours.

471 *City Planning*. Municipal organization and administration; public health, public utilities, services, zoning, replanning; critical studies. Credit, 3 hours.

472 *Highway Engineering*. Design of roads and streets. Highway administration, organization, planning, financing, and operation. Credit, 3 hours.

473 *Municipal Engineering*. Engineering and legal problems of the city engineer, city government, city surveys, subdivision design, building codes, legal procedures for making public improvements. Credit, 3 hours.

### Computer Engineering

GE 316 *Programming*. The organization of a digital computer. Characteristics of typical machines. Mechanics of programming; relative addressing, loops, sub-routine entry, indexing. Debugging. Two lectures, 3 hours laboratory. Same as 1-MA 335. Credit, 3 hours.

401 *Computing Techniques*. Direct analog principles, basic digital computing methods, differential analyzer methods. Prerequisite: ES 312. Credit, 3 hours.

411 *Analog Computers*. Electrical analogs of physical systems, active and passive circuit analogies, synthesis of transfer functions with operational amplifiers, function generation, scaling. Two lectures, 3 hours laboratory. Prerequisite: ES 312. Credit, 3 hours.

422 *Analog Computer Design*. Design of circuitry of electronic analog computers; mathematical theory, logical networks, circuit analysis and design. Two lectures, 3 hours laboratory. Prerequisite: EE 316. Credit, 3 hours.

431 *Digital Computers*. Computing machines, systems of numbers, mechanical representation of integers, methods of storage, input and output systems and programming. Prerequisite: ES 312. Credit, 3 hours.

432 *Digital Computers*. Study of order codes, checking procedures, programming and applications of digital computer systems. Prerequisite: GE 431. Credit, 3 hours.

441 *Digital Computer Design*. General properties of digital computers, mathematical theory of design gates, flip-flops, memory devices and design of logical networks. Two hours lecture, 3 hours laboratory. Prerequisite: EE 316. Credit, 3 hours.

442 *Logical Design of Digital Computers*. Study of logical structure of components and interrelations necessary for automatic operation. Two hours lecture, 3 hours laboratory. Prerequisite: GE 441. Credit, 3 hours.

### Electrical Engineering

EE 200 *Introduction to Electrical Engineering*. Basic physical concepts and phenomena for all electrical engineering courses. Prerequisite: 1-MA 121. Credit, 3 hours.

303 *Direct Current Electricity*. Fundamental theory and circuits for direct current motors, generators, and related equipment. Prerequisite: EE 200. Fee, \$6.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

304 *Alternating Current Electricity.* Theory and application of alternating current circuits. Analysis of circuits containing resistance, capacitance, and inductance. Emphasis on single phase and polyphase equipment. Prerequisite: EE 303. Fee, \$6.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

305 *AC and DC Electricity.* Electric and magnetic fields and circuits, electromagnets, direct and alternating current machinery and electronic devices. Prerequisite: 1-MA 121. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours.

308 *Theory of Acoustics.* Basic acoustical theory and problems. Credit, 2 hours.

311 *Industrial Electronics.* Theory and application of electronics to the industrial field, with emphasis on control circuits and devices. Prerequisite: EE 200 or EE 305. Credit, 3 hours.

312 *Electrical Power Transmission.* Power transmission lines and transformers, with related problems in energy storage and conversion. Prerequisite: EE 200. Credit, 3 hours.

313 *Electrical Power Transmission.* Power distribution and load studies, operating characteristics of transmission lines, traveling waves, corona, and mechanical design. Prerequisite: EE 312. Credit, 3 hours.

315 *Electronic Engineering.* Fundamental electronic theory and circuits. Prerequisite: EE 200. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours.

316 *Electronic Engineering.* Fundamental electronic theory and circuits, including transmission lines, antennas, and propagation. Prerequisite: EE 315. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours.

325 *Vacuum Tubes and Semiconductors.* Theory, design, operational characteristics, and applications of vacuum tubes and semiconductors. Prerequisite: EE 200. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours.

326 *Electrical and Electronic Measurements.* Theory and techniques of laboratory measurements of time, frequency, power, fields, noise and circuit parameters. Prerequisite: EE 315. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours.

371 *Intelligence Transmission.* Open wire transmission. Cable, and coaxial transmission lines and application of electrical filters, equalizers, phase correction networks, delay circuits, and impedance matching devices. Prerequisite: EE 316. Credit, 3 hours.

405 *Direct Current Machinery.* Theory, design, and construction of direct current machines; field and armature winding. Prerequisite: EE 304. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours.



- 406 *Alternating Current Machinery.* Theory, design and construction of polyphase equipment; field and armature winding. Prerequisite: EE 304. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours.
- 416 *Transmission Lines.* Theory and design of two-wire, coaxial, and wave guide transmission systems. Prerequisite: EE 316. Credit, 3 hours.
- 417 *Radiating Systems and Propagation.* Radiation and field theory; emphasis on basic theory and concepts. Prerequisite: EE 416. Credit, 3 hours. (Same as 1-PH431g.)
- 438 *Television Engineering.* Basic theory and practice of television transmitting and receiving systems. Prerequisite: EE 316. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours.
- 439 *Broadcast Engineering.* A study of Federal Communications Commission laws and practices for commercial radio and television. The student is required to pass the first class radiotelephone operator's license or equivalent examination to complete the course. Prerequisite: EE 316. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours.
- 459 *Circuit Analysis and Synthesis.* Mathematical analysis of complex networks and linear systems; emphasis on solutions by network theorems and transforms. Prerequisite: EE 316. Credit, 3 hours.
- 460 *Transistor Theory Circuits.* Semiconductor theory and circuit applications; emphasis on recent contributions to the theory. Prerequisite: EE 325. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours. (Same as 1-PH 432g.)
- 461 *Aircraft Electronics.* Application of electronics to the aircraft field; emphasis on communications, radar, and related navigational aids. Prerequisite: EE 316. Credit, 3 hours.
- 470 *Introduction to Microwaves.* Theory and practice used in microwave systems; emphasis on telemetry, radar, and video applications. Prerequisite: EE 316. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours.
- 480 *Systems Analysis and Synthesis.* Theory and application of closed loop electrical, mechanical, and hydraulic control devices; emphasis on stability criteria. Prerequisite: EE 316. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours.
- 486 *Electrical Utilities.* The economics of generating electrical power for the public, including various considerations which affect the station location, design, construction, operation, and maintenance. Prerequisite: EE 304. Credit, 3 hours.
- 489 *Pulse Techniques.* Pulse circuits and analysis by application of transform theorems; pulse circuit synthesis. Prerequisite: EE 459. Credit, 3 hours.

490 *Microwave Tubes*. Klystrons, magnetrons, traveling and backward wave tubes, and other types of microwave tubes and their application. Prerequisite: EE 470. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours.

### Engineering Science

ES 211 *Engineering Mechanics*. Forces, couples, force systems, resultants, components, equilibrium, frame structures, center of gravity, and moments of inertia. Prerequisite: ME 102; 1-MA 121. Credit, 3 hours.

312 *Engineering Mechanics*. Kinematics, relative velocities and accelerations, kinetics, dynamics of translation and rotation, work, energy, impact, and momentum. Prerequisite: ES 211. Credit, 3 hours.

321 *Mechanics of Solids*. Concept of stress and Hooke's Law, analysis of axial force members and systems, shearing stress, combined stresses and strain, the generalized Hooke's Law, stresses due to bending of beams, deflection of beams, statically indeterminate beams, torsion of bars, theory of instability of columns, and strain energy. Prerequisite: ES 211. Credit, 4 hours.

351 *Metallurgy*. Fundamentals of the metallurgy of iron, steel, and alloys, an introduction to the atomic structure, crystal structure, and micro-structure of materials. Prerequisites: 1-CH 114; 1-PH 212. Credit, 3 hours.

371 *Fluid Mechanics*. Application of the laws of statics, buoyancy, stability, energy, and momentum to the behavior of ideal and real fluids. A study of dimensional analysis and similitude as related to flow, dynamic lift and related problems. Prerequisites: ES 312, 381. Credit, 3 hours.

381 *Thermodynamics*. Temperature, thermodynamic systems, first law, work, heat, steady flow, energy equation, ideal gases, second law, reversibility and irreversibility, Carnot cycle, entropy, properties, vapor processes. Prerequisites: 1-MA 212; 1-PH 212. Credit, 3 hours.

382 *Thermodynamics*. Gas mixtures, power cycles, refrigeration, and air conditioning. Prerequisite: ES 381. Credit, 2 hours.

400 *Technical Writing*. Composition for technical papers, reports and scientific articles suitable for publication. Readings in technical periodicals. Credit, 3 hours.

417 *Continuum Mechanics*. Analysis of stress and strain, velocity conditions, compatibility equations, elasticity, torsion, plate problems. Prerequisites: ES 321; 1-MA 220. Credit, 3 hours. (Same as 1-PH 423g.)

421 *Vibrations*. Principles of harmonic motion, free and forced vibrations with one, two or many degrees of freedom; damped vibrations; complex systems and methods of solution. Prerequisites: 1-MA 220; ES 312. Credit, 3 hours.

452 *Metallurgy*. Basic laws of thermodynamics applied to metallurgy; constitution diagrams. Prerequisite: ES 351. Credit, 3 hours. (Same as 1-CH 425.)

453 *Theory of Material Properties*. Kinetic theory. Atomic structure; periodic table. Microscopic structure of gases, liquids, and solids. Properties such as cohesive energy, elasticity, viscosity, thermal conductivity, diffusion, specific heat, and electrical conductivity. Prerequisite: ES 321; 1-MA 220. Credit, 3 hours.

461 *Numerical Analysis*. Mathematical and experimental methods of solving problems in the various fields of engineering. Dimensional analysis, representation of experimental data, graphical and numerical solution of differential equations, and analogies and computers. Prerequisites: 1-MA 220; ES 312. Credit, 3 hours. (Same as 1-MA 425g.)

465 *Applied Vector Analysis and Complex Functions*. Elementary operations with vectors and complex numbers, vector and scalar products, differentiation, analytic functions, and applications to engineering analysis. Prerequisite: 1-MA 220. Credit, 3 hours.

471 *Engineering Research and Design*. Projects of a research, design or development nature. The student will be expected to define the problems, select a method of approach, develop the theory, design an experiment to check the theory, set up the experiment, collect and analyze the data, and compare results with the theory. Each project will terminate with a critical report of the work performed and a proposed program for further research. This course is designed to utilize and coordinate all the formal course work contained in this curriculum. Fee, \$3.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

472 *Engineering Research and Design*. Continuation of ES 471. Fee, \$3.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

483 *Heat Transfer*. Elements of heat transfer by conduction, convection, and radiation; steady state fluid flow; analogs; techniques for the solution of engineering problems. Prerequisites: 1-MA 220; ES 381. Credit, 3 hours.

### Industrial Engineering

IE 321 *Methods and Motion Study*. Methods used in developing procedures for effective utilization of effort in industrial operations. Laboratory practice in analyzing job situations. Process charts, operation charts, micro-motion study, principles of motion economy, job standards and time standards. Fee, \$4.00. Two lectures, 3 hours laboratory. Credit, 3 hours. (Same as 3-MG 335.)

331 *Industrial Safety*. Safety methods in industry. Safety codes, compensation, inspection, safety educational program, industrial facilities to care for injured workmen, health hazards and protective measures, safeguards on equipment and buildings to prevent accidents. Prerequisite: ME 251. Credit, 2 hours. (Same as 3-MG 338.)

411 *Tool Engineering*. A study of the processes and machine tools of production with emphasis on the design of jigs, fixtures, punches, dies, and other special production tools. Prerequisite: ME 252. Two lectures, 3 hours laboratory. Credit, 3 hours.

431 *Engineering Administration*. A study of the management process to include such factors as principles of cooperative action, economy of incentives, theory and structure of formal organizations, authority, bases of specialization, and the nature of executive responsibility. Credit, 3 hours.

441 *Engineering Law*. The influence of contract, property, and tort law upon engineering activities; legal principles relating to the organization and management of engineering companies and government departments, and legal procedures of interest to engineers. Specific topics considered include contracts, agency, partnerships, corporations, liens and expert testimony. Credit, 3 hours.

461 *Factory Planning*. A study of factors affecting the layout and re-layout of industrial plants. Particular emphasis is placed upon product analysis, economic analysis, materials handling, production line techniques, and principles of layout and departmentalization. Problems involving small and medium size plants are analyzed and solved in the laboratory. Fee, \$4.00. One lecture, 6 hours laboratory. Credit, 3 hours.

471 *Statistical Quality Control*. Application of statistical methods to control the quality of manufactured products. Control charts are developed from theoretical concepts to practical applications. Analysis of sampling plans and sampling tables. Credit, 3 hours. (Same as 3-MG 433g.)

491 *Operations Research*. A study of the scientific methods which make available to executive departments, a quantitative basis for decisions regarding the operations under their control. Early development, value, mathematical analysis, methods, personnel and organization for effective operations research. Credit, 3 hours. (Same as 3-MG 491g.)

### **Mechanical Engineering**

ME 102 *Engineering Problems*. A study of the slide rule, basic mathematical operations, dimensional consistency, significant figures, motion, work, and energy. One lecture, 2 hours laboratory. Credit, 2 hours.

111 *Engineering Drawing*. Lettering, sketching, orthographic projection, sectional views, dimensioning, auxiliary projection and drawing for interchangeable assembly. Six hours laboratory. Credit, 2 hours.

112 *Descriptive Geometry*. The geometry of engineering drawing, intersections and developments, axonometric projection, oblique projection and graphing techniques. Six hours laboratory. Credit, 2 hours.

- 251 *Mechanical and Industrial Processes.* Methods of processing engineering materials. Laboratory projects and industrial plant tours emphasize current process techniques. Fee, \$4.00. One lecture, 3 hours laboratory. Credit, 2 hours.
- 252 *Manufacturing Design and Operations.* An analysis and evaluation of design and production factors as related to engineering materials. Such criteria as engineering economy, mechanical measurements, design complexity and automation. Fee, \$4.00. Two lectures, 2 hours laboratory. Credit, 3 hours.
- 311 *Mechanisms.* A study of the relative motions of machine parts including the velocities and accelerations. Cams, rolling contact, gearing and flexible connectors. Prerequisites: ME 111; ES 312. Fee, \$3.00. One lecture, 3 hours laboratory. Credit, 2 hours.
- 431 *Air Conditioning.* Principles of thermodynamics, heat transfer and fluid flow applied to year-round air conditioning. Heating and cooling loads. Physiological principles. Psychrometry and its applications to air conditioning. Cycles for heating, cooling, humidifying and dehumidifying. Transmission and distribution of air. Prerequisite: ES 381. Credit, 3 hours.
- 441 *Internal Combustion Engines.* Application of thermodynamics, fluid mechanics, and chemistry to internal combustion engines. Performance characteristics, combustion, carburation, cooling, supercharging, fuels and lubricants, accessories and controls. Prerequisites: ES 382, 371. Credit, 3 hours.
- 451 *Fluid Power.* A study of hydrostatics and hydrodynamics. Viscous and turbulent flow. Hydraulic pumps and motors, circuit design, and the application of hydraulic power. Prerequisite: ES 371. Two lectures, 3 hours laboratory. Credit, 3 hours. (Same as 1-PH 424g.)
- 461 *Engineering Laboratory.* A study of the principles and techniques employed in engineering tests and measurements. Calculations and written reports are required of investigations. Prerequisite: ES 382. Fee, \$4.00. Two lectures, 3 hours laboratory. Credit, 3 hours.
- 462 *Engineering Laboratory.* A continuation of the principles of engineering measurements. Detailed investigation of the statistical and dynamical characteristics of measuring devices; theory of errors; probable error; static characteristics of thermocouples, thermometers, radiation means, manometers, Pitot tubes, rotameters. Prerequisite: ME 461. Fee, \$4.00. Two lectures, 3 hours laboratory. Credit, 3 hours.
- 481 *Machine Design.* The principles of machine design including technique, procedure, stresses and deflection of machine elements, and evaluation of material properties. Theory and practice of machine design as applied to various machine parts. Prerequisite: ES 321. Two lectures, 3 hours laboratory. Credit, 3 hours.

482 *Machine Design*. The theory and practice of machine design as applied to bearings, lubrication, gears, clutches, brakes, and flexible machine elements. Prerequisite: ME 481. Two lectures, 3 hours laboratory. Credit, 3 hours.

### Nuclear Engineering

NE 411 *Nuclear Engineering*. Engineering applications of nuclear energy. The principles and practices of isotope separation, production of plutonium and nuclear reactor operation. Credit, 3 hours.

421 *Nuclear Instrumentation*. Principles of operation of apparatus for measuring ionizing radiations. Prerequisite: 1-PH 462. One lecture, 3 hours laboratory. Credit, 2 hours. (Same as 1-PH 463g.)

431 *Nuclear Reactor Theory*. Principles of chain reactors. Neutrons, conditions for criticality, reactor dimensions, time dependent reactor behavior. Prerequisite: NE 411. Credit, 3 hours. (Same as 1-PH 465g.)

432 *Reactor Theory*. Mathematical and physical description of neutron motion and reactor behavior; transport theory, and diffusion theory. Prerequisite: NE 431. Credit, 3 hours. (Same as 1-PH 466g.)

441 *Radiation Hazard and Protection*. Safe limits of exposure and tolerance dosage of alpha, beta, gamma, and neutron, radiation; monitoring procedures; calculation of exposure doses and protective methods. Prerequisite: 1-PH 462. Credit, 3 hours. (Same as 1-PH 467g.)

451 *Reactor Design*. Engineering design of typical reactors; homogeneous, heterogeneous, stationary power, power breeders. Prerequisite or concurrent registration: NE 431. Credit, 3 hours. (Same as 1-PH 468g.)

## English

MYERS (Head, Division of Language and Literature and Chairman, Department of English), BARODY, BIGELOW, D. CONLIN, COOKE, ELLIS, ERNO, HENSHAW, HERMAN, HERRING, HOROWITZ, JOHNSON, KEENAN, LYLE, MONTAGUE, OSENBURG, PORTNOFF, RATLIFF, RYAN, SCHILLING, SHAW, STEPHENS, TAYLOR, KATHERINE TURNER, WELSH, SIDNEY WILCOX, J. ZIMMERMAN.

### English

EN 01 *Remedial English*. A sub-collegiate course for students who fail to pass the college placement examination in English. Such students are required to complete this course satisfactorily before they may be admitted to EN 101. Clinical facilities for discovering and attempting to eliminate causes of individual difficulties. Counts on course load, but carries no credit. Three hours per week.

- 101 *First Year English*. Narrative and descriptive writing; emphasis on paragraph structure, correctness in English fundamentals, exactness and concreteness of statement; dictionary and library practice; intensive and extensive reading. Credit, 3 hours.
- 102 *First Year English*. Expository writing; emphasis on organizing and unifying long papers, improvement in style, expansion of vocabulary. Introduction to word study; practice in research, including the writing of a model term paper. Intensive and extensive reading. Prerequisite: EN 101. Credit, 3 hours.
- 103 *Introduction to Literature*. An introduction to literature through literary types, designed for students not majoring in English. Selections taken mainly from modern writers. Credit, 3 hours.
- 151, 152 *Directed Reading for English Majors and Minors*. Supervised reading with a weekly individual conference with instructor. Credit, 1 hour each.
- 201 *World Literature—The Classical and Medieval Periods*. Selections from the great literature of the world in translation and lectures on the cultural background of the writings. Prerequisite: EN 101. Credit, 3 hours.
- 202 *World Literature—The Renaissance and Modern Periods*. A continuation of EN 201. Selections from the great literature of the world in translation, and lectures on the cultural background of the writings. Prerequisite: EN 101. Credit, 3 hours.
- 211 *Advanced Composition*. For students interested in further training in organization and expression of ideas. Factual and imaginative discourse are treated. Prerequisite: EN 102. Credit, 3 hours.
- 221 *Survey of English Literature*. A consideration of the content and form of the earlier English literature, including a study of the individual and national characteristics of certain authors. Prerequisite: EN 102. Primarily for English majors and minors. Credit, 3 hours.
- 222 *Survey of English Literature*. A continuation of EN 221, based upon the later English literature. Prerequisite: EN 102. Primarily for English majors and minors. Credit, 3 hours.
- 311 *Creative Writing*. Writing laboratory. Lectures and conferences dealing with the various forms of imaginative writing. Prerequisite: EN 211. Credit, 3 hours.
- 312 *Current English Usage*. Recent changes and current trends in the language, with emphasis on American English and the factual basis of grammar. Prerequisite: EN 222 or equivalent. Credit, 3 hours.
- 313 *Introduction to Semantics*. Nature of meaning and the function of language, designed to improve accuracy of communication and to provide a technique for analyzing false or misleading statements. Prerequisite: junior standing. Credit, 2 hours.

- 321 *Contemporary British Poetry*. British poetry of the twentieth century; techniques, aims, and significance. Prerequisite: EN 103 or equivalent. Credit, 3 hours.
- 341 *American Literature*. From colonial times to the Civil War, including the growth of nationalism and the rise of the New England school. Open to those specializing in other departments who have junior standing. Prerequisite: EN 102. Credit, 3 hours.
- 342 *American Literature*. From Whitman to the present. The influence of westward expansion, the growth of regionalism, the literature of social protest. Open to those specializing in other departments who have junior standing. Prerequisite: EN 102. Credit, 3 hours.
- 343 *Contemporary American Poetry*. American poetry of the twentieth century; techniques, aims, and significance. Prerequisite: EN 103 or equivalent. Credit, 3 hours.
- 351 *Contemporary Fiction*. A study of important contemporary writers; their careers and distinctive traits, with particular attention to the relationship of their ideas with present-day problems. Prerequisite: EN 103 or equivalent. Credit, 3 hours.
- 352 *Short Story*. The development of the short story as a literary form; analysis of its technique through study of examples from the work of representative authors. Prerequisite: EN 103 or equivalent. Credit, 3 hours.
- 411g *Advanced Creative Writing*. Continuation of EN 311. Prerequisite: EN 311 or consent of instructor. Credit, 3 hours.
- 412g *Professional Writing*. Lectures and conferences concerning techniques of writing for publication. Prerequisites: EN 311 or consent of instructor. Credit, 3 hours.
- 413g *History of the English Language*. Development of the language from the earliest times to the modern period. Prerequisites: EN 211, 221. Credit, 3 hours.
- 421g *Shakespeare: The Tragedies*. Critical study of five plays. An introduction to the problems of Shakespearean scholarship. Prerequisite: EN 221. Credit, 3 hours.
- 422g *Shakespeare: The Comedies*. A rapid reading of all the comedies. Studies of the comic spirit and Shakespeare's comic genius. Prerequisite: EN 221. Credit, 3 hours.
- 423g *Milton*. The life of Milton, his relation to the literary and social background of his period, and textual study of his chief works. Prerequisite: EN 221. Credit, 3 hours.
- 424g *Chaucer*. A study of Chaucer's language, poetry, and intellectual background. Prerequisite: EN 221. Credit, 3 hours.
- 425g *Nineteenth Century Poetry: Romantic Period*. Study of and readings in the poetry of Wordsworth, Coleridge, Shelley, Keats, Byron. Prerequisite: EN 222. Credit, 3 hours.



- 426g *Nineteenth Century Poetry: Victorian Period.* The poetry of the second half of the century. Special study of Tennyson, Browning, Arnold. Prerequisite: EN 222. Credit, 3 hours.
- 427g *Age of Johnson.* The chief writers, movements, and books during Johnson's career as a dominating literary figure, together with their most important relationships to predecessors and followers. Prerequisites: EN 221, 222. Credit, 3 hours.
- 441g *Contemporary American Drama.* A study of the American Drama since World War I, with special attention to experimental techniques. Prerequisite: EN 222 or equivalent. Credit, 3 hours.
- 451g *Development of the Novel.* From the origins of prose fiction to 1850. Analysis of typical examples and reading of outside assignments. Prerequisite: EN 103 or 222. Credit, 3 hours.
- 452g *Modern Fiction.* A study of the modern novel beginning with Flaubert and ending with Conrad. Prerequisite: EN 222 or equivalent. Credit, 3 hours.
- 453g *History of the Drama.* The English drama from the Middle Ages to the present with selective examples of foreign influences. Reading of representative plays of each period. Prerequisite: EN 103 or 222. Credit, 3 hours.
- 454g *Modern Drama.* The chief dramatic writers of the generation preceding World War I, with special attention to experimental techniques. Prerequisite: EN 222 or equivalent. Credit, 3 hours.
- 455g *The Form of Verse: Theory and Practice.* A study of the types, history, criticism, and schools of theory of metrical form. Analysis of lyric, narrative, and dramatic poetry. Original verse writing optional. Prerequisite: one semester survey of American or British literature, or equivalent. Credit, 2 hours.
- 456g *Classical Background of English Literature.* A study of the myths and legends of Greece and Rome and some of the works in which they appear. Credit, 2 hours.
- 471g *Literature for Junior and Senior High School Students.* A study of prose and poetry which meet the interests, desires and capabilities of the high school boy and girl. Recent literature stressed. Prerequisite: EN 222. Credit, 3 hours.
- 480g *Methods of Teaching English.* Methods of instruction, organization, and presentation of appropriate content in English. Prerequisite: 2-SE 311 or concurrent registration. Credit, 3 hours.
- 510 *The Structure of English.* Analysis of the structural patterns of English from both the grammatical and linguistic points of view. Prerequisite: EN 312. Credit, 3 hours.
- 511 *Theory and Practice of Rhetoric.* Students will be required to demonstrate their grasp of stylistic theory by doing at least competent apprentice work in various assigned forms. Prerequisite: EN 510, or consent of department head. Credit, 3 hours.

521 *Nondramatic Poetry of the Seventeenth Century*. Lyric, narrative, and philosophic verse. Cavalier, Metaphysical, and Puritan groups. Eccentricities and standards of form. Special attention to Herrick, Waller, Donne, Herbert, Crashaw, Marvell, and certain poems of Milton and Dryden. Credit, 3 hours.

550 *Contemporary Comparative Literature*. A study of current trends in American and other literatures with emphasis on their significance in contemporary thought. Prerequisite: EN 351 or consent of department head. Credit, 3 hours.

500 *Research Methods*. Credit, 3 hours.

590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

593 *Thesis*. Credit, 6 hours.

## Foreign Languages

BOWMAN (Chairman, Department of Foreign Languages), CARON, ESCUDERO, GROBE, MARTINEZ, VON DER HEYDT, IRMA WILSON.

### Foreign Languages

FL 100 *Introduction to Foreign Languages*. This course portrays the significance of languages in society, including study of the history of language, family relationships existing among languages, word relationships, and meanings. Emphasis will be upon languages of Western Europe with some reference to Slavic and Oriental tongues. Credit, 2 hours.

480g *Methods of Teaching Foreign Languages*. Methods of instruction, organization, and presentation of appropriate content in Foreign Languages. Prerequisite: 2-SE 311 or concurrent registration. Credit, 3 hours.

500 *Research Methods*. Credit, 3 hours.

### French

FR 101, 102 *Elementary French*. Grammar and vocabulary, with selected readings, to provide basic skills in speaking, aural comprehension, reading, and writing; supplementary materials to contribute to cultural understanding of French institutions and people. For beginners. Credit, 4 hours each semester.

110 *Practical Phonetics for Singers*. To acquaint singers with the fundamentals of French phonetics and sound production. Correct pronunciation in reading and singing. Credit, 2 hours.

201, 202 *Intermediate French*. Additional emphasis on the development of ability to speak, read, write, and comprehend French, through grammar review and the reading of selected materials. Prerequisite: FR 102, or its equivalent. Credit, 4 hours each semester.

311, 312 *French Composition and Conversation*. Designed to increase writing ability and fluency in conversation for business, travel, or social purposes, with emphasis on correct pronunciation, intonation and extension of practical vocabulary. Prerequisite: FR 202, or consent of the instructor. Credit, 3 hours each semester.

321, 322 *Survey of French Literature*. The most significant works, authors, and literary movements of French literature from its beginnings to the end of the 19th century. Lectures, discussions, collateral readings and reports. Prerequisite: FR 202, or consent of the instructor. Credit, 3 hours each semester.

435g *French Literature of the 16th Century*. The influence of the Renaissance on the literature of France in the 16th century, as found in the works of Rabelais, Marot, DuBellay, Ronsard, and Montaigne. Prerequisite: FR 202. Credit, 3 hours.

441g *French Literature of the 17th Century*. A study of "le Grand Siècle," with emphasis on the classical writers of drama, prose, and poetry. Prerequisite: FR 202. Credit, 3 hours.

445g *French Literature of the 18th Century*. The most significant writers of the "Age of Reason," including Montesquieu, Voltaire, Diderot, and Rousseau; the contributions of Lesage, Marivaux, Prevost, and Beaumarchais to the development of the novel and drama. Prerequisite: FR 202, or consent of the instructor. Credit, 3 hours.

451g *French Literature of the 19th Century*. Representative works of the principal dramatists, novelists, poets, and essay writers from early Romanticism to the end of the century. Prerequisite: FR 202. Credit, 3 hours.

461g *French Literature of the 20th Century*. A survey of the most significant novelists, dramatists, essayists, and poets of France in the 20th century. Prerequisite: FR 322. Credit, 3 hours.

## German

GR 100 *Reading Knowledge of German*. Basic grammar to develop ability to read the language accurately for research purposes. Stress on intensive reading in the sciences and other fields. Intended only as a research tool, cannot be taken as a substitute for GR 101. No prerequisite. Three hours per week. No credit.

101, 102 *Elementary German*. Drill in pronunciation and vocabulary; study of basic grammar; reading and conversation. For beginning students. Credit, 4 hours each semester.

110 *Practical Phonetics for Singers*. To acquaint singers with the fundamentals and the elements of German phonetics and sound production. Correct pronunciation in reading and singing. Credit, 2 hours.

201, 202 *Intermediate German*. Reading of literary texts; practice in conversation and composition; review of grammar. Prerequisite: GR 102. Credit, 4 hours each semester.

311, 312 *German Composition and Conversation*. Development of writing ability and oral expression. Material based on everyday life in Germany. Prerequisite: GR 202. Credit, 3 hours each semester.

321, 322 *Survey of German Literature*. A survey of German literature from its beginnings to the present, with special emphasis on the Classical period. Prerequisite: GR 202, or consent of instructor. Credit, 3 hours each semester.

435g *German Literature of the 16th Century*. A study of literary, historical, sociological and religious problems of the "Age of Luther," as found in such authors as Hans Sachs, Brant, Hutten, Fischart and Luther. Prerequisite: GR 202. Credit, 3 hours.

441g *German Literature of the 17th Century*. A study of German literature of the Barock Period. The reforms of Opitz, the lyric period, the mysticism of Angelus Silesius and Jakob Bohme, the plays of Gryphius and the prose of Grimmelshausen. Prerequisite: GR 202. Credit, 3 hours.

445g *German Literature of the 18th Century*. The various literary trends of the 18th century, with special emphasis on Lessing, Wieland, Klopstock and Herder. Prerequisite: GR 202. Credit, 3 hours.

451g *German Literature of the 19th Century*. Study of the major prose writers and dramatists. Readings, lectures, and reports. Prerequisite: GR 202. Credit, 3 hours.

461g *German Literature of the 20th Century*. A study of leading German writers of the 20th century, including Hauptmann, Mann, Rilke, Hofmannsthal, Kafka, and Frank. Lectures, discussion, reports. Prerequisite: GR 322 or consent of instructor. Credit, 3 hours.

### Latin

LA 101, 102 *Elementary Latin*. A beginner's course. This course enables students to acquire an ability to read and translate the language. The learning of forms and vocabulary is combined throughout with reading in Latin. Credit, 4 hours each semester.

201, 202 *Intermediate Latin*. Readings from the orations of Cicero; and selections from Ovid or other authors. Prerequisite: LA 102. Credit, 4 hours each semester.

### Russian

RU 101, 102 *Elementary Russian*. Russian sounds, vocabulary, the grammar essential for simple oral and written composition, reading, and conversation. Credit, 4 hours each semester.

201, 202 *Intermediate Russian*. Development of a sound reading knowledge of Russian. Systematic review of grammar. Rapid reading and oral expression. Outside reading in the student's field of interest. Prerequisite: RU 102. Credit, 4 hours each semester.

## Spanish

SP 101, 102 *Elementary Spanish*. A study of pronunciation, vocabulary, the grammar essential for simple oral and written expression, and reading. Beginners only. Credit, 4 hours each semester.

201, 202 *Intermediate Spanish*. Review of grammar. Vocabulary-building, reading, oral and written expression. Prerequisite: SP 102. Credit, 4 hours each semester.

211 *Commercial Spanish*. Develops ability in Spanish commercial vocabulary and business correspondence. Information regarding Spanish-American exports, imports and industry. Prerequisites: SP 101, 102. Credit, 2 hours.

311, 312 *Spanish Conversation*. Conversation to develop fluency and accuracy. Material based on everyday Spanish life. Prerequisite: SP 202. Credit, 2 hours each semester.

313, 314 *Advanced Spanish Composition*. Course designed to develop skill and accuracy in self-expression in Spanish. Special emphasis on structure and form. Study of style in selections from representative authors. Prerequisite: SP 202. Credit, 3 hours each semester.

321, 322 *Survey of Spanish Literature*. A comprehensive view of the development of Spanish literature from its beginnings to the present with some emphasis on the evolution of Spanish thought and literary ideals. Conducted in Spanish. Prerequisite: SP 202 or permission of instructor. Credit, 3 hours each semester.

427g, 428g *Spanish American Literature*. A survey of the significant literature and writers from the colonial period to the present. Prerequisite: SP 322. Credit, 3 hours each semester.

429g *Mexican Literature*. Representative writers and literary movements since 1810. A study of the works of Fernandez de Lizardi, Altamirano, Gutierrez Najera, Sierra, Azuela, Lopez Velarde, and others. Prerequisites: SP 201, 202, 313, 314. Credit 2 hours.

443g *Life and Works of Cervantes*. A study of the life and works of Cervantes with emphasis upon *Don Quijote* and the *Novelas ejemplares*. Lectures, readings, and reports. Prerequisite: 12 hours in upper division courses. Credit, 3 hours.

444g *The Drama of the Golden Age*. Selected plays of Lope de Vega, Tirso de Molina, Calderon de la Barca, and others. Outside readings and reports. Prerequisite: 12 hours in upper division courses in Spanish. Credit, 3 hours.

451g, 452g *Spanish Literature of the 19th Century*. A study of the Romantic dramatists of this century and the most representative novelists and poets of the second half of the century. Prerequisite: SP 322. Credit, 3 hours each semester.

455g *The Regional Novel*. The chief characteristics of the Spanish regional novel as shown in representative works. Prerequisite: SP 322, or consent of instructor. Credit, 3 hours.

456g *Manuel Galvez and the Novela de la Ciudad.* A study of the works of Manuel Galvez and the interpretation of urban life in Argentina. Prerequisite: 12 hours in upper division courses in Spanish or graduate standing. Credit, 3 hours.

461g, 462g *Spanish Literature of the 20th Century.* A study of the creative achievements of the Generation of 1898 and significant tendencies in the works of contemporary writers. Prerequisite: SP 322. Credit, 3 hours each semester.

472g *Spanish-American Civilization.* A study of the people, the growth of their institutions and culture, and the aspirations of their great men. A knowledge of Spanish is not necessary. No prerequisite. Credit, 3 hours.

481g *History of the Spanish Language.* Survey of the linguistic development of the Spanish language from the epoch of Vulgar Latin to the present day. Prerequisites: SP 313, 314 or equivalent. Credit, 2 hours.

493g *The Teaching of Spanish in the Elementary School.* The course is designed for teachers who are interested in introducing the teaching of Spanish in the elementary grades. It integrates the techniques of teaching with the rudiments of the Spanish language from a linguistic point of view. Credit, 3 hours.

494g *Introductory Spanish for Teachers of Bilingual Children.* The course is designed to help teachers of bilingual children to orient these children to the American public school system. It emphasizes the study of fundamentals of Spanish and the vocabulary pertinent to everyday situations among those of Hispanic culture. Prerequisite: Senior or graduate standing. Credit, 3 hours.

525 *History of the Spanish Novel.* The development of the novel from its beginnings to the present. Reading of representative works of the different periods. Prerequisite: Graduate standing. Credit, 3 hours.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

## Geography

RENNER (Chairman, Department of Geography), Ross.

### Geography

GE 111 *Elements of Geography.* Climate, relief, drainage, soils, plant and animal life; their inter-relationship and influence upon man. Credit, 3 hours.

112 *Geomorphology.* Development and interpretation of the relief features of the earth. Prerequisite: GE 111 or 131. Credit, 2 hours.

- 131 *Economic Geography*. Production, distribution, and consumption of various types of commodities of the world and relationships to the activities of man. Credit, 3 hours.
- 141 *Map Reading and Interpretation*. Use of map symbols, projections, methods of graphic presentation used by the different sciences. Interpretation of maps, diagrams, and cartograms. One hour lecture, 3 hours laboratory. Credit, 2 hours.
- 142 *Map Making*. Development of map compilation and drafting skills. Construction of projections, contours, trachographics, hypsometrics, etc. Prerequisites: GE 111 or 131. One lecture, 3 hours laboratory. Credit, 2 hours.
- 151 *Meteorology*. Weather elements, meteorological instruments, weather maps, forecasting and their relation to activities of man. Prerequisite: GE 111. Credit, 3 hours.
- 221 *Geography of Arizona*. Landscape features, climate, soils, minerals, water resources, plant and animal life, and industries and their influence on man's activities. Prerequisite: GE 111 or 131. Credit, 2 hours.
- 222 *Geography of North America*. Physiographic provinces of the continent with their respective climates, products, and major activities of man. Prerequisite: GE 111 or 131. Credit, 3 hours.
- 223 *Geography of South America*. Physiographic regions, their climates, products, and human activities. Prerequisite: GE 111 or 131. Credit, 3 hours.
- 224 *Geography of Caribbean America*. A topical and regional study of the lands bordering the Caribbean, with a view to creating a basis for an understanding of the problems of the people as they are related to their own environment, to the rest of the world, and particularly to the United States. Prerequisite: GE 111 or 131. Credit, 2 hours.
- 311 *Conservation of Natural Resources*. Distribution, conservation, and most efficient use of natural resources of the United States, including soil, water, minerals, wild life, and recreational facilities. Prerequisite: GE 111 or 131. Credit, 3 hours.
- 321 *Geography of Europe*. Natural regions of Europe, their climates, relief features, drainage, soils, plants, and animals and their influence upon man's activities. Prerequisite: GE 111 or 131. Credit, 3 hours.
- 322 *Geography of Near, Middle, and Far East*. Regions, resources, and potentialities of Asia. A survey of the geographic background of the continent and interpretation of the physical, social, economic, and political factors. Prerequisites: GE 111 or 131. Credit, 3 hours.
- 323 *Geography of Africa, Australia, Oceania, and Antarctica*. Climates, vegetation, surface features, resources, and peoples, and

their role in the modern world. Prerequisite: GE 111 or 131. Credit, 3 hours.

341 *Cartography*. Continuation of topographic drafting and interpretation of aerial surveys. Introduction to cadastrals and land utilization surveys. Prerequisite: GE 142. One hour lecture, 3 hours laboratory. Credit, 2 hours.

351 *Climatology*. Principles of climate; attention to climatic regions and climate cycles. Prerequisites: GE 111, 151. Credit, 3 hours.

361 *Principles of Physical Geography*. A study of selected areas within the major physiographic regions. Basic introduction to physiography as a major tool for the geographer. Three lectures. Credit, 3 hours.

412g *Principles of Oceanography*. Marine relief, topography, water masses, currents, isohalines, isotherms, biotic environment, marine geo-chemistry, marine sedimentation as factors in the geography of the oceans. Prerequisites: GE 111; CH 111; or PH 101 or equivalent. Three hours lecture. Credit, 3 hours.

421g *World Geography*. Evolution or modification of cultures and economics influenced by natural environment. Prerequisite: GE 111 or 131. Credit, 3 hours.

422g *Geopolitics of Europe and the Near East*. Examination of the principles of geopolitics and their application to current affairs. Major emphasis on Russia, Britain, Germany, and Israel with attention to American interests. Prerequisites: GE 111 or 131, or HI 101 and 102, or PS 101. Credit, 3 hours.

424g *Geography of World Problems*. The study of world problems as a product of their geographic setting and the effects of man in changing his environment. Prerequisite: GE 111 or 131. Credit, 3 hours.

433g *Geography of Trade and Transportation*. Geographic analysis of the world's trade routes by land, sea, and air. Prerequisite: GE 111 or 131. Credit, 3 hours.

## Geology

MILLER (Chairman, Department of Geology), VIRGIL BAKER.

### Geology

GL 111 *General Geology*. Survey of physical and historical geology with applications to everyday life. Credit, 4 hours.

113 *Physical Geology*. Earth changes due to temperature, wind, water, ice, volcanoes, earthquakes, etc. Fee, \$2.00. Three lectures, 3 hours laboratory a week, a minimum of 18 hours field work a semester. Credit, 4 hours.



114 *Historical Geology*. Origin and chronological succession of events that have developed our earth and its life. Fee, \$2.00. Three lectures, 3 hours laboratory a week, a minimum of 18 hours field work a semester. Credit, 4 hours.

126 *Rocks and Minerals*. The identification, field classification, origin, variation, occurrence, associations, and uses of important types. Prerequisite: GL 113. Two lectures, 3 hours laboratory a week. Credit, 3 hours.

213 *Geomorphology*. Development and classification of landforms; a detailed analysis of the effect of geologic structure on the landforms developed during the normal cycle of erosion. Prerequisites: GL 113, 114. Two lectures, 3 hours laboratory. Credit, 3 hours.

215 *Geologic Maps*. Structural, stratigraphic, and historical interpretation of geologic maps and cross-sections. Prerequisite: GL 114. Fee, \$2.00. One lecture, 3 hours laboratory. Credit, 2 hours.

246 *Structural Geology*. Study of rock structures, the principles and mechanics of their formation, and their relation to surface features and mineral deposits. Prerequisites: GL 113 and 114. Credit, 3 hours.

319 *Field Geology*. Detailed systematic field work and preparation of a report which includes geologic maps and structure sections. Prerequisite: GL 246 and approval of the department head. Credit, 3 hours.

321, 322 *Mineralogy*. Mineral structure and identification based on crystal forms, physical properties and chemical composition. Prerequisites: CH 115; GL 114. Fee, \$3.00. Two lectures, 3 hours laboratory. Credit, 3 hours each semester.

335, 336 *Invertebrate Paleontology*. The structure and evolutionary development of fossil invertebrates with emphasis on morphology of skeletal parts and the application of paleontology to stratigraphic problems. Prerequisite: GL 114. Fee, \$2.00. Two lectures, 3 hours laboratory. Credit, 3 hours each semester.

360 *Topics in Geology*. Special topics in petrology, optical mineralogy, petroleum geology, and regional geology are open to students qualified to pursue independent studies. Prerequisite: Consent of instructor. Fee, Arranged. Credit to be arranged.

452g *Sedimentation and Stratigraphy*. Origin of sedimentary rocks and their significance in determining geologic history. Prerequisites: GL 113 and 114. Credit, 2 hours.

461g *Economic Geology*. Distribution, origin, occurrence, production and utilization of metallic and nonmetallic minerals. Fee, \$2.00. Credit, 3 hours.

## Health, Physical Education, and Recreation

THOMSON (Chairman, Department of Health, Physical Education, and Recreation), BRYANT, COLEMAN, CASTILLO, DEVINE, DICKINSON, M. ERICKSON, T. FLETCHER, GRIER, KAJIKAWA, KUSH, LAVIK, ONOFRIO, CLYDE SMITH (Head, Division of Health, Physical Education, and Recreation), STEVERSON, WEGNER, WULK, GILLANDERS, GISOLO, GRAHAM, KLANN, LAW, LOWNEY, MURPHY, PITTMAN, PLUMMER.

### Health Education

HE 100 *Hygiene*. Scientific facts and appreciations related to healthful living, adjustment to college life, and future personal health. Credit, 2 hours.

360 *School-Community Health*. The three main divisions of the school health program—health services, health instruction, healthful school living—in relation to the community health program; the importance and role of the classroom teacher in the school-community health education program. Prerequisite: HE 100. Credit, 3 hours.

370 *Organization and Administration of Health Education*. The areas of school health services, health instruction, healthful school living, and physical education in relationship to each other, and to the general educational program of school and communities. Prerequisite: HE 360. Credit, 3 hours.

371 *Directing Health Education in Schools*. The methods and materials currently important to the problems of health instruction in the schools. Units of instruction are developed for both the elementary and secondary schools. Prerequisite: HE 360. Credit, 3 hours.

461g *School Health Problems*. An advanced and intensive study of the school health program to help teachers develop skills in the analysis of health problems, and the solution of selected problems. Prerequisite: HE 360, or teaching experience. Credit, 2 hours.

470g *School-Community Health Councils*. The organization and operation of school health councils and school-community health councils. Prerequisite: HE 360, or teaching experience. Credit, 2 hours.

481g *Principles and Practices of Public Health*. The major areas of public health and the principles involved in the operation of an adequate community health program. Particular stress is directed to the public health programs of Arizona. Afternoon and evening field trips may be scheduled. Credit, 2 hours.

560 *Curriculum Construction in Health Education*. This course covers the problems of curriculum construction with respect to

the following areas: acquisition of materials, the establishment of basic curriculum philosophies, the application of educational principles, and the graduation of course content. Credit, 2 hours.

561 *Health Education Workshop*. The purpose of this workshop is to provide in-service training for teachers and administrators. Opportunities are provided to develop specific projects within the three major areas of elementary, secondary, and college health programs. Credit, 3 hours.

562 *Evaluation in Health Education*. This course is designed to discuss evaluation with respect to the use of textbooks, free and inexpensive literature, test construction, audio-visual aids, and the underlying bases of visual and auditory screening. Credit, 2 hours.

500 *Research Methods*. Credit, 3 hours.

590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

593 *Thesis*. Credit, 6 hours.

### Physical Education

PE 101, 102 *Freshman Physical Education*. Required of all freshmen not specializing in physical education. Fee, \$2.00 per semester. Twice a week. Credit, ½ hour each semester.

103, 104, 105, 106. *Restricted Activities*. Limited activities for students who cannot, because of disabilities, enroll in regular physical education classes. Written recommendation of the school physician required. Twice a week. Credit, ½ hour each semester.

110, 111 *Beginning Team Sports*. Classes in football, basketball, hockey, track and field, baseball, softball, soccer, speedball, volleyball, and other team sports. Credit may be given for varsity participation in these sports. Credit, ½ hour each semester.

120, 121. *Beginning Individual and Dual Sports*. Instruction in golf, tennis, badminton, archery, fencing, boxing, wrestling, rifle, gymnastics, and other individual and dual sports. Credit may be given for varsity participation in these sports. Archery fee, \$1.00. Credit, ½ hour each semester.

130, 131 *Beginning Dance*. Classes in tap, square, folk, social and modern dance and other dance activities are offered. Credit, ½ hour each semester.

140, 141 *Beginning Aquatics*. Classes in swimming, diving, and other water activities are offered. Credit may be given for varsity participation in these activities. Credit, ½ hour each semester.

150, 151 *Professional Activities*. The activities included are required of all men and women physical education majors. Required of freshmen and sophomores. Six hours per week, three days per week. Credit, 2 hours each semester.

160 *First Aid*. Prevention of accidents, methods of examination and temporary care for victims of accident or sudden illness. Red Cross certification. Credit, 2 hours.

161 *Introduction to Physical Education*. Orientation to the field of physical education. Required of all freshmen specializing in physical education. Credit, 3 hours.

210, 211 *Intermediate Team Sports*. Continuation of PE 111. Credit,  $\frac{1}{2}$  hour each semester.

220, 221 *Intermediate Individual and Dual Sports*. Continuation of PE 121. Credit,  $\frac{1}{2}$  hour each semester.

230, 231 *Intermediate Dance*. Continuation of PE 131. Credit,  $\frac{1}{2}$  hour each semester.

240, 241 *Intermediate Aquatics*. Continuation of PE 141. Life saving and water safety skills taught in this course may lead to appropriate Red Cross certificates. Twice a week. Credit,  $\frac{1}{2}$  hour each semester.

250, 251 *Professional Activities*. Continuation of PE 151. Credit, 2 hours each semester.

260 *First Aid Instructorship*. For individuals who wish to receive certification as Red Cross First Aid Instructors. Prerequisite: must be 20 years of age and hold current advanced certificate. Credit, 1 hour.

261 *Dance Composition*. Study and analysis of theme and dramatic ideas drawn from poetry, drama, music, and other art forms for use in dance composition. Workshop experience in developing these dance compositions into dance programs for production. Prerequisite: PE 330. Three times a week. Credit, 2 hours.

262. *Dance Production*. Theory of, and experience in, the staging of dance programs, including lighting, costuming, scenery, and make-up. Three times a week. Credit, 2 hours.

280 *History and Philosophy of Dance*. A study of dance from ancient times to the present. Consideration of dance as an art in relation to other arts; primitive, pre-classic, and modern forms. Dance composition, rhythm analysis, and accompaniment for dance. Three times a week. Credit, 2 hours.

310, 311, 312, 313. *Advanced Team Sports*. Continuation of PE 211. Credit,  $\frac{1}{2}$  hour each semester.

320, 321, 322, 323. *Advanced Individual and Dual Sports*. Continuation of PE 221. Credit,  $\frac{1}{2}$  hour each semester.

330, 331, 332, 333. *Advanced Dance*. Continuation of PE 231. Credit,  $\frac{1}{2}$  hour each semester.

340, 341 *Advanced Aquatics*. Continuation of PE 241. Skills taught in this course may lead to W.S.I. Red Cross Certificate. Credit,  $\frac{1}{2}$  hour each semester.

- 360 *Theory and Practice of Teaching Dance.* The theory and practice in the teaching of folk, square, and social dance. Students study, analyze, and acquire materials suitable for elementary, secondary, college and recreation use. Credit, 2 hours.
- 361 *Theory and Practice of Teaching Dance.* Theory of and practice in the teaching of fundamental rhythms and modern dance. Study, analysis, and acquisition of materials suitable for elementary, secondary, college, and recreational use. Credit, 2 hours.
- 362 *Officiating Football, Basketball, Baseball and Track.* A study of rules and the mechanics of officiating used in football, basketball, baseball and track. Credit, 3 hours.
- 363 *Techniques of Officiating.* Qualification of officials, techniques of officiating, interpretation of rules and opportunity to qualify as an NSGWS rated official in tennis, volleyball, basketball, softball. Credit, 3 hours.
- 364, 365 *Coaching.* Theory and techniques of varsity sports. Four hours a week. Credit, 2 hours each semester.
- 366 *Playground Leadership.* Games and rhythmic activities suitable for the use of classroom teachers in the direction and supervision of play activities. Required for elementary certification. Credit, 2 hours.
- 367 *Theory and Practice of Teaching Physical Education in the Elementary Schools.* Practice in, and analysis of, the activities suitable for elementary school programs as a basis for the development of units, sequence of units by year and grade level. Credit, 2 hours.
- 368 *Theory and Practice of Teaching Sports.* Class organization, teaching and coaching of team, individual, and dual sports are discussed and experienced in laboratory situations. Prerequisite: PE 251, or the equivalent. Four hours a week. Credit, 3 hours.
- 371 *Organization and Administration of Physical Education.* Organization and administration procedures are analyzed in terms of needs of elementary and secondary students. Practice relating to program, budget, facilities, scheduling, and staff are examined. Credit, 3 hours.
- 385 *Kinesiology.* Analytic and synthetic studies are made of body movements. Neuromuscular skills and body mechanics are emphasized. Prerequisite: ZO 172. Credit, 3 hours.
- 386 *Physiology of Exercise.* The effects of the various types of exercises upon body structure and function. Prerequisite: ZO 102. Credit, 3 hours.
- 461g *Evaluation in Physical Education.* The need and importance of evaluation in physical education activities. Skill tests, knowledge tests, attitude tests, motor capacity tests, and classification tests are studied, and opportunity for practical experience

in administering the several types of tests is provided. Credit, 3 hours.

462g *Techniques of Athletic Training.* Emphasizes the correct use of personal and field equipment, support procedures and therapeutic aids. Laboratory work includes practical techniques in the clinical use of supporting apparatus, physiotherapy. Prerequisite: ZO 102. Two lectures, 1 hour laboratory. Credit, 2 hours.

463g *Advanced Dance Composition.* The investigation and practice of archaic, preclassic, and contemporary styles of choreography. Prerequisite: PE 261, or recommendation of the instructor. Credit, 2 hours.

464g *Dance Accompaniment.* An opportunity for the analysis of the function of accompaniment for dance; experience in the use of percussion, voice, records, piano, and selected instruments in relation to their use in composition. Credit, 2 hours.

465g *Modern Practices in Physical Education.* Current practices, materials, and trends of physical education activities and their function in contemporary physical education programs are analyzed and experienced. Credit, 2 hours.

470g *Adapted Physical Education.* The organization, administration and content of adapted physical education programs including an examination of the principles of body mechanics and their application to exercise and to adapted physical education activities, experience in related screening tests, and the preventive rather than the corrective aspects of postural improvement. Prerequisite: PE 385, or the equivalent. Credit, 3 hours.

471g *Organization and Administration of Intramural Activities.* Principles and practices of the organization of intramural programs on the elementary and secondary levels. Credit, 2 hours.

480g *Methods of Teaching Physical Education.* Methods of instruction, organization, and presentation of appropriate content in physical education. Prerequisite: 2-SE 311 or concurrent registration. Credit, 3 hours.

560 *Curriculum Construction in Physical Education.* Application of the principles, practices, and functional philosophies of curriculum making in physical education. Prerequisite: Major in physical education or teaching experience. Credit, 2 hours.

570 *Organization and Administration of Athletics.* This course offers practical suggestions and guides for managing the affairs of an athletic program. Athletic financing, policies, budgets, contests, schedules, travel, insurance, and current athletic trends are considered. Credit, 2 hours.

571 *Supervision of School Health and Physical Education.* This course is designed to provide an analysis of contemporary trends and practices in the supervision of health and physical education with special emphasis on; supervision of teachers, in-service train-

ing, public relations and policies related to promotions. Credit, 2 hours.

580 *History and Philosophy of Physical Education.* The historical development of the philosophies of physical education and the assumption on which current professional philosophies rest. Credit, 3 hours.

585 *Synthesis of Body Movement.* This is a study of basic movement common to all physical education activities combined with derivations peculiar to special forms of movement. The course provides opportunity to investigate and experience movement in relation to space, time, dynamics, kinesthetic cognition and purpose. Credit, 3 hours.

500 *Research Methods.* Credit, 3 hours.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

### Recreation

RE 120 *Recreational Games.* Instruction and playing experience in table tennis, shuffleboard, bowling, paddle tennis, deck tennis, croquet. Twice a week. Credit, ½ hour.

150 *Camping Activities and Skills.* An introductory course in camp counseling involving outdoor cookery, nature study, nature crafts, camp crafts, story telling, dramatics, songs and music, overnight trips, shelters, orienting, axmenship, firecraft, food preservation, and cooking devices. Fee, \$5.00. One hour discussion, 3 hour laboratory. Credit, 3 hours.

260 *Introduction to Community Recreation.* Orientation to the field of organized recreation in terms of its history, philosophy, and development; and the contribution of organized recreation to the school and community. Credit, 2 hours.

261 *Social Recreation.* The development of methods and materials for leadership in social recreational activities for school, church, home, club, and other social groups. Credit, 2 hours.

262 *Program Planning and Recreational Leadership.* Study of principles and practices involved in planning and carrying out programs of recreation for playgrounds, community centers and youth serving organizations. Acquisition of methods, materials and leadership skills and techniques through laboratory practice. Credit, 3 hours.

370 *Public School Camping and Program Planning.* Designed to equip the student with materials, procedures, and plans for a school camp program, and to establish the relationship of camping to other areas of education. Fee, \$3.00. Credit, 3 hours.

371 *Organization and Administration of Recreation.* The study and analysis of the administrative structure and organizational policies and practices on the local, state, and national level. Analysis of methods of operation, finance, personnel standards and problems, legal aspects and study of modern trends in terms of present and projected future community needs. Credit, 3 hours.

372 *Youth Organizations.* Orientation in principles, practices, and leadership experience of natural youth serving organizations. Credit, 3 hours.

470g *Camp Organization and Administration.* Organization and administration of camps with special emphasis on school camps; preparation for camp management; consideration of budget, camp site, and personnel. Fee, \$3.00. Credit, 2 hours.

570 *Modern Practices in Supervisory Techniques in Recreation.* This course presents a comparative study of modern practices in supervision, evaluation, and organizational structure of recreation programs as related to existing administrative structures. Credit, 2 hours.

## History and Political Science

COONROD (Chairman, Department of History and Political Science), BINGHAM, DANNENFELDT (Head, Division of Behavioral and Social Sciences), DUDLEY, HERRICK, HUBBARD, KRENKEL, ROSS RICE, TILDEN, (Dean, College of Liberal Arts), VAN PETTEN.

### History

HI 101, 102 *Survey of Western Civilization.* The first semester traces western civilization from its origins through the Reformation; the second semester continues the survey to modern times. Credit, 3 hours each semester.

103, 104 *History of the United States.* The growth of the Republic from colonial times, with the first semester covering through the Civil War period and the second continuing to the present day. Credit, 3 hours each semester.

121, 122. *Ancient Orient and the Classical World.* The first semester deals with the history and civilization of the Ancient Orient and Greece; the second semester continues classical history to the downfall of the Roman Empire. Credit, 3 hours each semester.

131 *Economic History of the United States.* The development of American economic institutions, with attention given to their early background in Europe. Credit, 3 hours.

132 *History of the Southwest.* Development of the southwestern states, people and economic life, with emphasis on Arizona. Credit, 3 hours.



241, 242 *History of Latin America.* In the first semester ancient civilization, explorers and conquerors, and colonial institutions are studied. In the second semester the nationalistic development of the independent republics since 1825 is covered. Credit, 3 hours each semester.

251, 252 *History of England.* A survey of the political, economic and social development of the English people. The first semester covers the period from the earliest times to the seventeenth century; the second semester brings the survey up to the present. Credit, 3 hours each semester.

261 *The Soviet Union.* The development of the Soviet System since the Revolution of 1917, with emphasis on its Russian, European, Asian, and global significance. Prerequisite: One of the following: HI 102 or 104. Credit, 3 hours.

311 *Historical Literature.* Deals comparatively with the works and ideas of leading historians. Prerequisites: Previous completion of at least six hours in upper division courses in history. Credit, 2 hours.

321 *The Middle Ages.* The development of Western Europe from the fall of Rome to the Renaissance with particular emphasis on the social and cultural development. Prerequisite: HI 101 or approval of instructor. Credit, 2 hours.

322 *Renaissance and Reformation.* Antecedents and development of the Renaissance in Italy, its spread into the rest of Europe, and the subsequent changes in religious and political thought. Prerequisite: HI 101, or approval of instructor. Alternates with HI 421. Credit, 2 hours.

324 *Nineteenth-Century Europe.* Growth of nationalism in nineteenth-century Europe, with emphasis upon economic, political and social trends. Prerequisites: HI 101, 102. Credit, 2 hours.

331 *Colonization of North America.* Colonial era of American history, both Spanish and English, with some consideration of French and other colonial peoples to 1783. Credit, 3 hours.

334 *Civil War and Reconstruction.* Analysis of the causes and developments of the war, political, constitutional and social issues of reconstruction, and their effects on post-war America. Prerequisite: HI 103 or 104. Credit, 3 hours.

336 *Recent American History.* Covers the important developments in American history since 1914. Prerequisite: HI 104. Credit, 3 hours.

337 *American Frontier.* Territorial expansion and westward movement of the American people from colonial times to 1890. Prerequisites: HI 103, 104. Credit, 3 hours.

338, 339 *American Cultural History.* The study of culture in a broad connotation including ideas, ideals, the arts, and social and

economic standards. The first semester traces the nation's colonial background and early national period. The second deals with the age of industrialism and modern America. Prerequisites: First semester, HI 103, or approval of instructor; second semester, HI 104, or approval of instructor. Credit, 3 hours each semester.

341 *History of Mexico*. The formation, culture and social life of the Mexican people since colonial times. A knowledge of Spanish is desirable but not essential. Credit, 3 hours.

421g *French Revolution and Napoleon*. Period of revolution in France and Napoleonic war, 1789-1815. Prerequisite: HI 102 or approval of instructor. Alternates with HI 322. Credit, 2 hours.

422g *Contemporary Europe*. European history since the First World War. Prerequisites: HI 101, 102. Credit, 2 hours.

431g, 432g *American Biography*. Considers the noted Americans who made important contributions to United States history. The first semester deals with the period prior to 1860; the second semester with the period since 1860. Prerequisites: First semester, HI 103, or approval of instructor; second semester, HI 104, or approval of instructor. Credit, 3 hours each semester.

433g *American Foreign Relations*. The machinery of American diplomacy and development of American foreign policy. Prerequisites: HI 103, 104. Credit, 3 hours.

434g *Constitutional History of the United States*. The origin and development of the Constitution of the United States with special emphasis on how it has been interpreted by the courts. Prerequisites: HI 103, 104. Credit, 3 hours.

451g *History of the British Empire*. The growth and development of the British Empire with particular stress on the commercial, economic, and governmental aspects of the empire. Prerequisites: HI 101, 102 or HI 251, 252. Credit, 3 hours.

452g *Tudor and Stuart England*. Emphasis upon the political, social, economic, and cultural developments which contributed to the forming of the modern world. Prerequisite: HI 101 or 251. Credit, 3 hours.

454g *British Constitutional History*. Traces the historical development of the constitutional system of Great Britain from the Middle Ages to the present with particular emphasis on the growth of democracy. Prerequisites: HI 101, 102 or HI 251, 252. Credit, 2 hours.

461g *Development of Russian Institutions*. The development of Russian political, economic, social, religious, and intellectual institutions and traditions from the 9th century to the Revolution of 1917. Prerequisite: Completion of General Education requirement in history. Credit, 2 hours.

471g *Far Eastern Civilization*. History of China, Central Asia, Japan, Malaysia, and India from antiquity to about 1640. Credit, 2 hours.

472g *The Impact of the West upon the Orient.* Emphasis upon the changes wrought upon China, Central Asia, Korea, and Japan to the present. Credit, 2 hours.

481g *History of the Middle East.* Historical development of the area inhabited by the Arab, Turkish, Israeli, and Persian peoples, emphasizing the cultures and the world strategic significance of the area. Prerequisite: Completion of General Education requirement in history. Credit, 2 hours.

500 *Research Methods.* Credit, 3 hours.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

### Political Science

PS 101 *Modern Politics and Government.* The role and principles of government in the world today. Origins, structure, and practices of government. Not designed for students desiring to major in political science. Credit, 3 hours.

111 *Municipal Government.* The politics and administration of city and town government in the United States. Problems, forms, and services of city governments. Credit, 3 hours.

112 *State and Local Government.* The politics and administration of state, county, and township government in the United States. Consideration of organizational problems. Services offered the public by these governments. Special attention to Arizona government. Acceptable for teacher certification in lieu of Arizona government part of PS 311. Credit, 3 hours.

113 *United States National Government.* Principles and practices of our federal government. Origins of the Constitution, federalism, citizenship, and powers of the legislative, executive, and judicial branches. Governmental services. Acceptable for teacher certification in lieu of Federal government part of PS 311. Credit, 3 hours.

221 *American Political Parties.* Development of the American two-party system. Role of parties in relationship to public opinion, pressure groups, and public officials. Party organization and activities. Credit, 3 hours.

231 *History of Political Thought.* Political philosophers and their theories from Plato and Aristotle to modern times. Credit, 3 hours.

311 *Constitutional Government.* U. S. federal (national) government and Arizona state government. Meets requirement for teacher certification. Offered each semester. Each part may be taken separately: Credit, Federal 2 hours; Arizona 1 hour. Credit for both parts, 3 hours.

312 *Comparative National Governments*. Comparison of the principles and practices of American government with those of other modern national governments. Emphasis on the governments of England and the Soviet Union. Prerequisite: PS 101, or approval of instructor. Credit, 2 hours.

321 *The Legislative Process*. Consideration of the lawmaking process followed in selected legislative bodies. Composition of membership, organization, powers. Impact of internal and external forces on legislation. Prerequisite: PS 101. Credit, 2 hours.

341, 342 *Public Administration*. Comparison of administration in private business and government. Organizational principles and administrative techniques used in national, state, and local governments in the United States. Personnel and fiscal management. Powers of public administrators and their control. Prerequisite: PS 101, or approval of instructor. Credit, 2 hours each semester.

351 *International Politics*. Attention is given to the development of the modern system of nation-states. Analysis of power politics. Role of international law. Prerequisite: PS 101, or approval of instructor. Credit, 2 hours.

352 *Modern European Diplomacy*. A study of the principal European diplomatic developments and international affairs from 1648 to the present. Prerequisite: HI 102. Credit, 3 hours.

411g *Problems in State and Local Government*. Techniques and tools for research in state and local government with particular application to current problems of Arizona governments. Individual and group projects. Prerequisite: Approval of instructor. Credit, 2 hours.

421g *Political Opinion and Propaganda*. Analysis of informal and organized influences and pressures upon our political institutions. Credit, 2 hours.

423g *Contemporary Political Leaders*. Consideration of the social status, techniques, and personality traits of selected world political figures of today. Credit, 2 hours.

431g *Contemporary Political Thought*. Political ideas and philosophy from the French Revolution to the present. Prerequisite: PS 101. Credit, 2 hours.

441g *Public Personnel Management*. History of civil service; comparison of the older civil concept with the recent concept of the merit system. Problems of recruitment, examination preparation, pay scales, promotion, employee motivation, discipline. Prerequisite: PS 101. Credit, 2 hours.

451g *International Organization*. Collective security as a means of maintaining world peace. Aims and accomplishments of the League of Nations, the United Nations, and other world organizations. Prerequisite: PS 101. Credit, 2 hours.

590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

## Home Economics

RANNELLS (Head, Division of Home Economics and Chairman, Department of Home Economics), ELLSWORTH, ESSIG, H. HOOVER, KAGY, SCHMIDT.

### Home Economics

HO 111 *Orientation to Home Economics.* A preview of the home economics field, including opportunities for employment. First year, first semester. Credit, 1 hour.

112 *Introduction to Family Living.* For students not specializing in home economics. Deals with the establishment of a home, children, finances, foods, selection of clothing, and art in the home. Open to men and women. Credit, 3 hours.

122 *Clothing Selection.* The selection of clothing with consideration of materials, cost, style, design, the individual, and the occasion. Credit, 2 hours.

123 *Clothing Construction.* Selection and construction of garments based on the needs of the individual with emphasis on becomingness in line and color. The use and alteration of commercial patterns to fit various figures. Open to non-majors and home economics majors not specializing in teaching. Six hours a week. Credit, 3 hours.

124 *Clothing Construction.* Selection and construction of garments with personal analysis as the basis. Emphasis on sewing techniques. Open only to those specializing in teaching of home economics. Six hours a week. Credit, 3 hours.

131 *Home Nursing.* Information on health for the family, care of the sick, the mother through pregnancy and childbirth, and infant care. Credit, 1 hour.

141 *Elementary Nutrition.* Principles of nutrition, diet, food in its relation to health. Open to men and women. Credit, 2 hours.

142 *Applied Food Principles.* Principles of cookery and nutritive facts involved. Open only to those specializing in the department. Fee, \$5.00. Six hours a week. Credit, 3 hours.

143 *Food Preparation and Meal Service.* Fundamental processes in food preparation, meal planning, and table service. Open to both men and women not specializing in home economics and to students specializing in clothing, textiles and related art. Fee, \$5.00. Six hours a week. Credit, 3 hours.

221 *Clothing: Tailoring.* Construction of coat or suit; tailoring techniques, alteration of patterns, and fitting emphasized. Prerequisites: HO 122, 124. Six hours a week. Credit, 3 hours.

222 *Textiles.* Textile fibers, their construction, finish, sources, characteristics, identification, and uses. Credit, 2 hours.

223 *Home Furnishings*. Housing; selection, combination, and arrangement of furniture; color schemes; choice of wall finishes, floor coverings, draperies, and accessories. Credit, 3 hours.

231 *Problems of the Consumer*. Problems, wants, needs, and practices of the consumer-buyer of foods, textiles, clothing, and home equipment. Influence of advertising, retail stores, and government agencies. Credit, 2 hours.

232 *Child Development*. Physical, emotional, social, and intellectual development of children from birth to five years. Observation in the nursery school. Open to men and women. Prerequisite: PY 100. One hour observation and 3 hours discussion a week. Credit, 3 hours.

233 *Household Equipment*. A study of the selection, construction, use, care, and repair of all types of household equipment. Credit, 3 hours.

241 *Food for the Family*. The production, economic selection, and nutritive value of foods, types of meals, and table service. Practice in planning, preparing and serving meals. Open only to those specializing in the department. Prerequisites: HO 141, 142. Fee, \$5.00. Six hours a week. Credit, 3 hours.

331 *Family Relationships*. Understanding of family life and current problems including preparation for marriage. Open to men and women. Credit, 3 hours.

332 *Home Management*. A study of the management of various resources available to the family with a view to promoting family well being and satisfaction. Goals, standards of living, use of time, money and energy considered. Credit, 3 hours.

333 *Home Management House*. Students live in Home Management house for a six-week period, and carry on all duties involved in homemaking. Open to seniors in home economics. Prerequisites: HO 131, 232, 241, 332. Board and room at regular college rate. Credit, 3 hours.

341 *Large Quantity Cookery*. Theory and practice in preparing food for large groups. Laboratory work in the college dining hall. Prerequisite: HO 142. Fee, \$2.00. Six hours laboratory and one hour discussion a week. Credit, 3 hours.

342 *Diet Therapy*. A study of methods of adapting, modifying, and applying nutrition principles to abnormal conditions. Prerequisites: HO 241, 441; CH 464, 465; ZO 102. Fee, \$2.00. Five hours a week. Credit, 3 hours.

421g *Clothing: Pattern Designing*. Fundamental principles in designing, cutting, and fitting individualized garments. Flat patterns used. Prerequisites: HO 122, 123 or 124. Fee, \$2.00. Six hours a week. Credit, 3 hours.

422g *Clothing: Draping and Dress Design.* Working with fabric on a dress form expressing original ideas in dress design; emphasis upon the understanding of the principles involved in fitting and pattern construction. Prerequisites: HO 122, 123, or 124. Fee, \$3.00. Six hours a week. Credit, 3 hours.

424g *Applied Home Furnishing.* Theory and experience in home furnishing projects such as construction of curtains, draperies, and slip covers, as well as refinishing of furniture. Prerequisites: HO 124 and 223. Credit, 2 hours.

431g *Nursery School Education.* Discussion and application of methods for guiding the young child in family and school relationships. Curriculum planning toward meeting fundamental needs of pre-school children. Opportunity for practical experience with children in the Nursery School. Prerequisite: HO 232 or PY 281, or 382. Two hours discussion a week, 4 hours laboratory. Credit, 3 hours.

432g *Behavior Problems of Young Children.* Diagnosis of behavior problems occurring most frequently in early childhood, their significance and remedial procedures. Prerequisite: Training in child development. Credit, 2 hours.

441g *Advanced Nutrition.* Special problems in diet and nutrition. Prerequisites: HO 141; CH 111. Credit, 3 hours.

442g *Experimental Cookery.* Application of experimental methods to preparation of common foods. Prerequisites: HO 142 and some chemistry. Fee, \$5.00. Six hours a week. Credit, 3 hours.

443g *Child Nutrition.* Special emphasis upon the nutritional needs from prenatal development through adolescence. Includes the study of food requirements, feeding practices, and indices of good nutritional status. Prerequisites: HO 241, 431. Five hours a week. Credit, 3 hours.

451g *The Teaching of Art Related to the Home.* The application of principles of art to problems of daily living. Use made of pertinent illustrative material. Opportunity provided to participate in teaching projects. Credit, 2 hours.

452g *The Teaching of Clothing and Textiles.* For teachers of clothing selection, construction, and care. Use of equipment, motivation and standards of work, individual illustrative material, evaluation. Students bring sewing equipment, including pieces of fabric. Prerequisite: An undergraduate class in methods of teaching homemaking. Credit, 2 hours.

454g *The Teaching of Food and Nutrition.* For homemaking teachers in elementary and secondary schools. Emphasis on family-centered focus within the limitations of the 50-minute class period. Prerequisite: Undergraduate class in methods of teaching homemaking. Credit, 2 hours.

480g *Methods of Teaching Home Economics*. Methods of instruction, organization, and presentation of appropriate content in Home Economics. Prerequisite: 2-SE 311 or concurrent registration. Credit, 3 hours.

521 *Recent Developments in Textiles*. The study of the recent developments in the textile field as they affect the consumer. Prerequisite: HO 222. Credit, 2 hours.

531 *Advanced Child Development*. Facts and concepts for interpreting and understanding personality and social development of the young child in the family. Methods, techniques, and patterns. Prerequisites: HO 232; PY 281, or consent of instructor. Credit, 3 hours.

541 *Recent Developments in Nutrition*. A study of recent research in nutrition with view of finding practical applications. Prerequisite: HO 141. Credit, 2 hours.

551 *Supervision of Home Economics Education*. For off-campus teachers of homemaking cooperating in the student-teaching program of the College and others qualified. An evaluation of programs of other states. A program suited to the needs of Arizona is developed. Prerequisite: Approval of instructor. Credit, 2 hours.

552 *Evaluation in Home Economics Education*. Newer concepts concerning evaluation and testing instruments and techniques in elementary and secondary schools. Prerequisite: Undergraduate course in methods of teaching homemaking. Credit, 3 hours.

500 *Research Methods*. Credit, 3 hours.

590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

## Humanities

SCHILLING (Chairman, Department of Humanities), BUKER.

### Humanities

HU 201 *Introduction to the Humanities*. An integrated course designed to develop a discriminating appreciation of art, music, literature, philosophy, and religion. The heritage of the past is presented in relation to life today. Credit given for attending selected plays, exhibitions, concerts. Prerequisites: 30 hours; EN 101, 102. Credit for General Education given only when both HU 201, 202 are taken. Credit, 4 hours.

202 *Introduction to the Humanities*. A continuation of HU 201. Prerequisites: 30 hours; EN 101, 102; HU 201. Credit for General Education given only when both HU 201, 202 are taken. Credit, 4 hours.



301 *The Humanities in Modern America*. An integrated course in American art, music, literature, and philosophy, with emphasis upon present developments. Participation in current college and community offerings in the subject fields is a supplementary activity. Prerequisites: EN 101, 102. One lecture and two discussion periods a week. Both HU 301, 302 must be taken to receive credit in General Education. Credit, 3 hours.

302 *The Humanities in Modern America*. A continuation of HU 301. Prerequisite: HU 301. One lecture and two discussion periods a week. Both HU 301, 302 must be taken to receive credit in General Education. Credit, 3 hours.

## Library Science

BATCHELOR (Chairman, Department of Library Science), MOFFIT.

### Library Science

LS 213 *The Library in the Modern School*. Acquaints the prospective or in-service teacher with the school library collection and its services, characteristics of appropriate books, sources of teaching materials, reading interests of boys and girls, and ways of using the school library in classroom instruction. Provision is made for specialization in elementary, junior, and senior high school fields. Credit, 3 hours.

223 *Libraries and Society*. A history of libraries, library agencies and services, with particular emphasis on the school library in the modern world and librarianship as a profession. Credit, 3 hours.

233 *Books and Publishing*. A survey of the materials and methods of writing and of publishers and publishing from early times to the present. Credit, 3 hours.

341 *Book Organization: Dewey Decimal Classification*. Introduction to the principles and applications of subject classification and the assigning of Cutter numbers. Credit, 2 hours.

342 *Book Organization: Catalog Records*. Introduction to the purpose and principles of cataloging library materials with emphasis upon the use of printed cards. Knowledge of touch-typing necessary. Prerequisite: LS 341. Two lectures, 4 hours laboratory. Credit, 2 hours.

351 *Card Catalog Management*. A study of the American Library Association rules for the organization, filing, and use of catalog card records. Prerequisite: LS 341, 342. One lecture, 2 hours laboratory. Credit, 1 hour.

352 *Book Conservation*. Practice in the techniques of the mending and preservation of library materials. One lecture, 2 hours laboratory. Credit, 1 hour.

363 *Library Book Selection.* Techniques and problems of selecting books for the school and public library. Attention given guides and aids, reading interests, publishers, dealers, etc. Credit, 3 hours.

373 *Book Services.* Principles and practices of the loan, reference and reading guidance services suitable for the public and school library. Credit, 3 hours.

383 *School Library Administration.* Organization and administration of the school library, its backgrounds, activities, functions, personnel, materials and equipment. Credit, 3 hours.

442g *Advanced Book Organization.* Emphasis on problems in acquisition, recording and organizing of library materials in high school and community libraries. Prerequisites: LS 341, 342. Two lectures, 4 hours laboratory. Credit, 2 hours.

462g *Reading and Communication.* Modern communication and its social and psychological effects through various media, considered in relation to the school library collections and services for youth. Prerequisite: LS 363. Credit, 2 hours.

463g *Library Materials for Children.* Introduction to the use of books and related materials available for children. Develops ability to select and integrate vital books and materials into the school curriculum and a free-reading library program. Prerequisite: L.S. minor or instructor's approval. Credit, 3 hours.

464g *Library Materials for Adolescents.* Introduction to the use of books and related materials in youth libraries and in the secondary school program. Develops ability to select and integrate vital books and materials into the school curriculum and a free-reading library program. Prerequisite: LS minor or instructor's approval. Credit, 3 hours.

472g *Advanced Reference Service.* Emphasis on special high school and adult reference materials and techniques, bibliography, and government publications for curricular and extra-curricular enrichment. Prerequisite: LS 373. Credit, 2 hours.

482g *Current Library Problems.* Reading in professional library literature on unsolved problems and current issues of librarianship as related particularly to the school library. Prerequisite: LS 383. Credit, 2 hours.

493g *Library Science Workshop.* An intensive study of selected school library problems, directed by the regular staff, and/or visiting specialists. Recommended for in-service school librarians. Prerequisites: LS 442, 462, 472, 482, or a minor in Library Science. Credit, 3 or 6 hours.

## Mass Communications

ALISKY (Chairman, Department of Mass Communications), BELL.

### Journalism

JO 110 *Introduction to Communications*. General survey of the communications industry, including the press, radio, and television; basic concepts of news, news values, and reporting of news; fundamentals of journalism; laboratory practice in news-gathering and news-writing. Prerequisite: EN 101. Two lectures, 2 laboratory hours. Credit, 3 hours.

211 *Journalism: Reporting*. Study and practice in the coverage and writing of news; structure of the news story and development of news values; laboratory practice; experience as reporter on the *State Press*. Prerequisite: JO 110. One lecture, 4 laboratory hours. Credit, 3 hours.

212 *Advanced Reporting*. Continuation of JO 211. Main types and sources of news; interviewing and re-writing; laboratory and *State Press* experience. Prerequisite: JO 211. One lecture, 4 laboratory hours. Credit, 3 hours.

275 *Advertising Principles*. Advertising as a communications tool in marketing and business management. Consideration of creative methods, survey of media, measurement of effectiveness, and coordination with other aspects of the sales and promotional program. Prerequisite: 3-MK 251 or JO 110. Credit, 3 hours. (Same as 3-AD 275.)

311 *News Photography*. Instruction with field and laboratory practice in camera and darkroom techniques for newspaper and magazine photographic work. Prerequisite: JO 110, or permission of instructor. Fee, \$10.00. One lecture, 3 hours activity. Credit, 2 hours.

312 *Communications Law*. Legal aspects of the rights and responsibilities of the press, radio, and television; regulations, restrictions, and "the people's right to know"; basic features of the law of libel, privilege, contempts, copyrights, access to information; background of court reporting. Prerequisite: JO 212. Credit, 3 hours.

313 *Copyreading and Editing*. Practical work in copyreading and headline writing; use of the newspaper stylebook; principles of typography and of makeup. Laboratory practice. Prerequisite: JO 212. Credit, 2 hours.

314 *History of Communications*. Development of American journalism from its English and colonial origins to the present day; development of radio and television, and the progression of the various media toward an industry of mass communications. Prerequisite: JO 212. Credit, 3 hours.

315 *Radio-Television News.* Techniques and practices of editing and preparing local and wire news copy for radio and television news broadcasts; laboratory practice in preparation of same for actual broadcasting. Prerequisite: JO 212. Credit, 3 hours.

320 *Staff Activity.* Experience and responsibility of editing and making up a complete newspaper as a member of its masthead staff. The College newspaper, the *State Press*, is used as the laboratory or work-project for this class. Prerequisite: JO 313. Credit, 2 hours.

401 *Public Relations.* Publicity methods and public relations; representation of business firms and institutions to the public. Includes training on what constitutes news-worthy material and how to communicate it through newspapers, magazines, radio-television stations, and other media. Prerequisite: 3-GB 233 or JO 211. Credit, 2 hours. (Same as 3-AD 401.)

411g *Special Assignment.* Selection and performance of a major project or projects on an individual basis. Prerequisites: JO 312, 320, 412. Credit, 2 to 5 hours.

412g *Editorial Interpretation.* The press as an influence upon public opinion. The byline story, editorial, and work of the columnists, in analyzing and interpreting current events. Prerequisite: JO 212. Credit, 2 hours.

413g *Advising High School Publications.* A course designed for high school journalism advisers. Problems of annual and newspaper staffs discussed. Credit, 2 hours.

421 *News Problems and Policies.* Seminar in journalism with emphasis upon major difficulties encountered and editorial decisions required in the writing, handling and publishing of news. Prerequisite: JO 312 or 412. Credit, 2 hours.

### Radio-Television

RT 230 *Radio and Television Speech.* An analysis of the growth and development of radio and television and a study of operational procedure in stations. Microphone delivery and practice in the utilization of sound, music, and scripts. Preparation and presentation of specialized types of radio speaking. Prerequisite: SE 200 or 120. Credit, 3 hours (Same as SE 230.)

321 *Radio-TV Drama.* The production of both radio drama and television drama, with emphasis on acting techniques appropriate to each form. Prerequisite: RT 230. Credit, 3 hours. (Same as DR 321.)

332 *Radio Writing and Production.* Principles of writing and production of non-dramatic radio programs, and application of these principles through writing and producing programs on KASC. Prerequisite: RT 230. Two hours class, 2 hours laboratory. Credit, 3 hours.

333, 334 *Radio-Television Writing and Production.* An advanced course in radio and television writing and production. Specific assignments in the production of College radio or television programs, or in the operation of Station KASC. Prerequisites: SE 332 or 431. Credit, 2 hours each semester.

371 *Radio and Television Advertising.* Techniques and problems of radio and television as advertising media, including program selection and planning, preparation of continuity and coordination with other forms of advertising. Prerequisite: 3-AD 275. Credit, 3 hours. (Same as 3-AD 371.)

431 *Television Writing and Production.* Principles and techniques of writing for television. Practical experience in the production of television programs through specific responsibilities for College programs. Prerequisite: RT 230. Fee, \$5.00. Two hours class, 2 hours laboratory. Credit, 3 hours.

472 *Radio-Television Station Management.* Background in the organization, procedures, and policies of radio-television stations. Financial and creative basis of station operation. Consideration of personnel and production problems, relationship with advertising agencies, networks and sponsors. Prerequisites: 3-AD 275 and SE 332 or 431. Credit, 3 hours. (Same as 3-AD 472.)

## Mathematics

WEXLER (Chairman, Department of Mathematics), CARR, FREUND, LOWENSTEIN, LYON, ROBERTS.

### Mathematics

MA 104 *Information, Automation, and Civilization.* Elementary exposition of the development, current status and probable effect of automation, computers, information theory, mechanized data searching, systems engineering, and theory of games. Technology as a prime mover in American culture. Credit, 3 hours.

105 *Mathematics for General Education.* To introduce the student who desires a well-rounded education into the extent of modern mathematics and its importance to our civilization. No prerequisite. Credit, 4 hours.

116 *Intermediate Algebra.* Review of fundamental operations: factoring; exponents and radicals; solution of equations; logarithms. Intended for students with (a) only 1 to 1½ years of high school algebra; (b) more than this amount taken some years back. Credit, 3 hours.

117 *College Algebra.* Intensive review. study of progressions, permutations and combinations, probability, determinants, theory of equations, as time permits. Credit, 3 hours.

118 *Trigonometry.* Identities and equations, logarithms, solution of triangles. Credit, 3 hours.

119 *Algebra and Trigonometry*. Subject matter equivalent to both MA 117, 118 in one semester. Capable students should take this course in place of MA 116, 117, 118, if they intend to go on in mathematics. Credit, 4 hours.

120, 121. *Analytic Geometry and Calculus*. A minimum amount of analytic geometry followed by the development of the fundamental concepts of differential and integral calculus. In turn, calculus is used to develop analytic geometry still further, and both are then freely used in applications to science and engineering. These courses, followed by MA 212, form a basic unit required in all engineering curriculums and for physical science and mathematics majors. Prerequisites: College algebra and trigonometry with a grade of C or better. Credit, 4 hours each semester.

212 *Analytic Geometry and Calculus*. A continuation of MA 120, 121, with special emphasis on integral calculations. Prerequisite: MA 121. Credit, 4 hours.

220 *Differential Equations*. Methods of solution of typical differential equations that come up in science and engineering. Primarily for engineering students. Prerequisite: MA 212. Credit, 3 hours.

221 *Advanced Calculus*. Multiple integrals, partial differentiation and applications; line integrals; other topics as time allows. Prerequisite: MA 212. Credit, 4 hours.

225 *Numerical Analysis*. Systems of enumeration. Mathematical instruments, computers, and tables of functions. Interpolation and elementary finite differences. Solution of equations and systems of equations. Prerequisite: MA 212, or concurrent registration. Credit, 3 hours.

226 *Introduction to Statistical Analysis*. A basic statistics course for students from all fields in which statistics find application. Prerequisite: College algebra or consent of instructor. Credit, 3 hours.

305 *Arithmetic in the Elementary School*. Proficiency in arithmetic; study of teaching methods. Credit, 3 hours.

321 *Advanced Calculus*. Continuation of MA 221. Improper definite integrals; differential equations; complex variables; other topics as time allows. Prerequisite: MA 221. Credit, 4 hours.

323 *Symbolic Logic*. Main features of a logic adequate to modern mathematics and science. The basis in language. Notions which play a part in all systematic thinking. Prerequisite: Math., 8 hours, or PI 101, or EN 313. Credit, 3 hours.

329 *Vector Analysis*. The algebra and calculus of vectors with applications to engineering and physics. Prerequisite: MA 212. Credit, 3 hours.

343 *Analytical Mechanics*. Vectors, forces in equilibrium, dynamics. Prerequisite: MA 212. Credit, 3 hours.

- 356 *Projective Geometry*. Analytic study of the projective properties of figures. Prerequisite: MA 120. Credit, 3 hours.
- 357 *Introduction to Modern Algebra*. Study of the concepts of modern algebra, such as rings, fields, ideals, isomorphism, etc. Credit, 3 hours.
- 358 *Differential Geometry*. Curves and surfaces and their properties. Prerequisite: MA 221. Credit, 3 hours.
- 362 *Engineering Mathematics*. Exploratory study of topics such as Fourier series and integrals; vector and tensor analysis; Laplace transform; probability theory and statistics; determinants and matrices. Prerequisite: MA 212. Credit, 3 hours.
- 405g *Mathematics for the Secondary School Teacher*. Choice of topics from higher algebra, trigonometry, and geometry. Credit, 3 hours.
- 411g *Calculus of Variations*. The basic ideas and techniques of the calculus of variations are developed. Applications to geometry, particle dynamics, elasticity, vibration theory, and geometrical optics. Prerequisite: MA 212. Credit, 3 hours.
- 419g *Probability*. Algebra of choice; probability theorems; compound probabilities; probability distribution functions; expected values; laws of large numbers; recurrent events. Prerequisite: MA 221. Credit, 3 hours.
- 420g *Differential Equations*. Devoted to the theory involved in differential equations, such as existence proofs. Some time devoted also to partial differential equations. Prerequisite: Consent of instructor. Credit, 3 hours.
- 425g *Numerical Analysis*. Error propagation. Approximation by numerical processes. Solution of ordinary differential equations. Matrices and matrix arithmetic. Least squares and Chebyshev approximation. Prerequisite: MA 225. Credit, 3 hours.
- 426g *Introduction to the Mathematical Theory of Statistics*. Many of the topics covered in MA 226 will be treated more extensively and from a more mathematical viewpoint. There will be more concentration on the various aspects of probability, distribution, theory, sampling and testing of hypothesis. Prerequisite: MA 212. Credit, 3 hours.
- 427g *Mathematical Statistics*. Introduction to the theories of correlation, chi-tests, estimation, and design of experiments. Prerequisite: MA 426. Credit, 3 hours.
- 435g *Digital Computer Programming*. Typical scientific applications of digital computers are studied. Methods for using existing modern equipment are shown; and practice problems set up by the students are solved on the IBM 704 computer. Prerequisite: MA 212. Credit, 3 hours.

436g *Advanced Digital Computer Programming*. A more extensive practice problem is solved on the IBM 704, along with discussion, as time permits, of automatic coding, library programming, executive routines, etc. Prerequisite: MA 435. Credit, 3 hours.

441g, 442g *Theory of Functions*. Concepts of limits, continuity, derivatives, epsilon proofs. Introduction to the theory of functions of a complex variable. Prerequisite: MA 221. Credit, 3 hours each semester.

443g *Analytical Mechanics*. Continuation, MA 343. Prerequisite: MA 343. Credit, 3 hours.

455g *Theory of Numbers*. The properties of whole numbers. Prerequisite: MA 117 or 119. Credit, 3 hours.

457g *Modern Algebra*. A systematic treatment of recent developments in algebra. Topics taken from theory of groups, rings, fields, and related systems. Prerequisite: MA 357. Credit, 3 hours.

480g *Methods of Teaching Mathematics*. Methods of instruction, organization, and presentation of appropriate content in mathematics. Prerequisite: 2-SE 311 or concurrent registration. Credit, 3 hours.

525 *Numerical Analysis*. Nature of the iterative process, and conveyance estimates. Ordinary differential equations. Partial differential equations. Eigenvalues and eigenvectors of matrices. Function approximation. Prerequisite: MA 425. Credit, 3 hours.

527 *Mathematical Statistics*. Continuation of MA 426. Prerequisite: MA 426. Credit, 3 hours.

541, 542 *Functions of a Complex Variable*. Analytic functions, contour integration, power series, analytic continuation, conformal mapping, and entire functions. Prerequisite: MA 442. Credit, 3 hours each semester.

543, 544 *Introduction to Mathematical Physics*. Transform calculus and its application to physics, eigen value theory, partial differential equations, and quantum mechanics. Prerequisites: MA 321, 343. Credit, 3 hours each semester.

555 *Theory of Numbers*. Theory of ideals, analytic number theory. Prerequisite: MA 455. Credit, 3 hours.

560 *Techniques of Operations Research*. Selected topics on game theory, linear programming, Monte Carlo methods, organization theory, inventory management, and model making. Prerequisite: MA 212 and consent of instructor. Credit, 3 hours.

567, 568 *Topology*. A discussion of the basic concepts of set theory, cardinal and ordinal numbers, and the well-ordering theorem and its equivalents. A study of general topological spaces including an introduction to function theory in abstract spaces and



topological algebraic structures. Prerequisite: MA 321 or consent of the instructor. Credit, 3 hours each semester.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

## Military Science and Tactics

FERRELL (Chairman, Department of Military Science and Tactics),  
BEAMER, BOOTH, FITZGIBBONS, JENCKES, LANDSEADEL, P. SMITH.

### Military Science

MS 101 *Basic Military Science (First Year).* Organization of the Army, individual weapons and marksmanship, and school of the soldier. Two lectures, 2 drills per week. Credit, 1.5 hours.

102 *Basic Military Science (First Year).* American military history and school of the soldier. Two lectures, 2 drills per week. Credit, 1.5 hours.

201 *Basic Military Science (Second Year).* Map reading and school of the soldier. Prerequisites: MS 101 and 102. Two lectures, 2 drills per week. Credit, 1.5 hours.

202 *Basic Military Science (Second Year).* Crew-served weapons and gunnery, and school of the soldier. Prerequisites: MS 101 and 102. Two lectures, 2 drills per week. Credit, 1.5 hours.

301 *Advanced Military Science.* Leadership; military teaching methods; organization, function, and mission of the arms and services; and exercise of command. Prerequisite: Two-year basic course or equivalent. Four lectures, 2 drills per week. Credit, 3 hours.

302 *Advanced Military Science.* Small unit tactics and communications, and exercise of command. Prerequisite: Two-year basic course or equivalent. Four lectures, 2 drills per week. Credit, 3 hours.

311 *Advanced Military Science.* Operations, training management, and exercise of command. Army flight training for accepted volunteers, requiring enrollment in 4-TA 380. Prerequisites: MS 301 and 302. Four lectures, 2 drills per week. Credit, 3 hours.

312 *Advanced Military Science.* Logistics, military administration and personnel management, service orientation, and exercise of command. Army flight training for accepted volunteers, requiring enrollment in 4-TA 380. Prerequisites: MS 301 and 302. Four lectures, 2 drills per week. Credit, 3 hours.

## Music

RIDER (Acting Chairman, Department of Music), AUTENRIETH,  
BARKLEY, BOWERS, BRITTON, BULLOCK, CHAUSOW, MILES  
DRESSKELL, NADINE DRESSKELL, G. FLETCHER, HARELSON,  
HINES, KEATING, QUAD, RICKEL, SCOLAR,  
MARION SMITH, STALZER.

### Music Performance

MP 100 *Class Piano Fundamentals*. Beginning class piano for all college students who have had none previously. (Not applicable toward a music major.) Credit, ½ hour.

109 *Elements of Conducting*. Essentials of conducting techniques used by both instrumental and vocal teachers in elementary and secondary school musical organizations. Twice a week. Credit, 1 hour.

111, 112, 211, 212 *Applied Music—Private Instruction in Major*. Private instruction in piano, organ, voice, violin, viola violoncello, contrabass, flute, oboe, clarinet, bassoon, saxophone, trumpet (cornet), french horn, baritone, trombone, tuba, and percussion. Prerequisites: Courses taken in numerical order to complete repertory and technical requirements. Two lessons per week. Credit, 2 hours each semester.

121, 122, 221, 222 *Applied Music—Private Instruction in Minor*. Private instruction in piano, organ, voice, violin, viola, violoncello, contrabass, flute, oboe, clarinet, bassoon, saxophone, trumpet (cornet), french horn, baritone, trombone, tuba, and percussion. Prerequisites: Courses taken in numerical order to complete repertory and technical requirements. One lesson a week. Credit, 1 hour each semester.

125, 126, 225, 226 *Basic Piano*. Instruction in Applied Music to be taken only by music majors who qualify in placement examinations. Two lessons a week. Credit, 1 hour each semester.

139, 140 *Class Strings*. Applied Music instruction on violin, viola, cello and contrabass given at the elementary level of performance. Especially designed for minor study of wind majors, but open to any students in the colleges who desire playing experience and can qualify by examination. Three hours a week. Credit, 1 hour each semester.

131, 132, 231, 232 *Class Piano*. A four-semester sequence of courses designed for music majors who lack piano experience and for music education students who need piano as a classroom tool and who have had little or no previous training in piano. Emphasis upon keyboard technique, sight-reading, simple accompaniments, keyboard harmony, and improvisation. Prerequisite: Courses taken in order listed (or placement examination) and MU 100. Two hours a week. Credit, 1 hour each semester.

133, 134, 233, 234 *Class Voice*. The systematic development of the principles of good singing. For non-music majors and as substitute for credits in Applied Music minor of music majors. Credit, 1 hour each semester.

139, 140 *Class Strings*. Applied Music instruction on violin, viola, cello and contrabass given at the elementary level of performance. Especially designed for minor study of wind majors, but open to any students in the colleges who desire playing experience and can qualify by examination. Three hours a week. Credit, 1 hour each semester.

141, 142, 241, 242 *Symphony Orchestra*. Membership in the Orchestra is open to all students of the colleges who can qualify on the basis of auditions with the director. Over a four-year period the student is introduced to the great masterpieces of symphony orchestra literature. This course may be repeated for four years. Four times a week. Credit, 1 hour each semester.

151, 152, 251, 252 *Choral Union*. Membership in the Choral Union is open to all students of the colleges who can qualify on the basis of auditions with the director. Superior singers from the Choral Union are selected for membership in the Concert Choir. The Concert Choir members represent the College on concert tours and in special programs, performing important choral literature designed for the smaller, select choir. Choral Union holds three rehearsals a week, and the Concert Choir members meet a minimum of two additional hours a week. Credit, 1 hour each semester.

155, 156, 255, 256 *Men's Glee Club*. Experience in rehearsal and performance of music for male voices. Public performances. Prerequisites: Courses to be taken in numerical order and permission of the conductor. Open to male students of any of the colleges. Credit, 1 hour each semester.

161, 162, 261, 262 *Symphonic and Marching Band*. Membership in the Symphonic and Marching Band is open to all students in the colleges who can qualify on the basis of auditions with the Director. In addition to the staging of formations and drills for football games and other events, the student is introduced to the great masterpieces of symphonic band literature over a period of four years. Five times a week. Credit, 1 hour each semester.

171, 172, 271, 272 *Opera Workshop*. Rehearsal and performance of operatic works. Study of practical production problems in the musical theatre. Several public productions yearly. Prerequisites: Courses taken in numerical order and permission of the instructor. Open to students of any of the colleges. Credit, 1 hour each semester.

181, 182, 281, 282 *Chamber Music Ensembles*. String, brass, woodwind, percussion, keyboard, vocal and mixed ensembles. Prerequisite: Permission of instructor. Twice a week. Credit, 1 hour each semester.

235, 236 *Educational Methods for Strings.* Practical class in gaining the string knowledge necessary for instrumental teachers in public schools. Fee: Instrumental rental \$2.50 per semester. Meets daily. Credit, 1 hour each semester.

237, 238 *Educational Methods for Brass and Percussion.* Practical class in gaining the brass and percussion knowledge necessary for instrumental teachers in public schools. Fee: Instrumental rental \$2.50 a semester. Meets daily. Credit, 1 hour each semester.

311, 312, 411, 412 *Applied Music—Private Instruction in Major.* Private instruction in piano, organ, voice, violin, viola, violoncello, contrabass, flute, oboe, clarinet, bassoon, saxophone, trumpet (cornet), french horn, baritone, trombone, tuba, and percussion. Prerequisite: Courses taken in numerical order to complete repertory and technical requirements. Two lessons a week. Credit, 2 hours each semester.

321, 322, 421, 422 *Applied Music—Private Instruction in Minor.* Private instruction in piano, organ, voice, violin, viola, violoncello, contrabass, flute, oboe, clarinet, bassoon, saxophone, trumpet (cornet), french horn, baritone, trombone, tuba, and percussion. Prerequisites: Courses taken in numerical order to complete repertory and technical requirements. One lesson a week. Credit, 1 hour each semester.

337, 338 *Educational Methods for Woodwinds and Percussion.* Practical class in gaining the woodwind and percussion knowledge necessary for instrumental teachers in public schools: Fee: Instrumental rental \$2.50 a semester. Meets daily. Credit, 1 hour each semester.

339 *Choral Conducting.* Elements of choral technique and interpretation. Required of music education vocal students. Prerequisite: MP 109. Three times a week. Credit, 2 hours.

340 *Instrumental Conducting.* Fundamentals of score reading, and interpretation of instrumental music. Required of all music education instrumental major students. Prerequisite: MP 109. Three times a week. Credit, 2 hours.

341, 342, 441, 442 *Symphony Orchestra.* Membership in the Orchestra is open to all students of the colleges who can qualify on the basis of auditions with the director. Over a four-year period the student is introduced to the great masterpieces of symphony orchestra literature. Four times a week. Credit, 1 hour each semester.

351, 352, 451, 452 *Choral Union.* Membership in the Choral Union is open to all students of the colleges who can qualify on the basis of auditions with the director. Superior singers from the Choral Union are selected for membership in the Concert Choir. The Concert Choir members represent the College on concert tours and in special programs, performing important choral literature

designed for the smaller, select choir. Choral Union holds three rehearsals a week, and the Concert Choir members meet a minimum of two additional hours a week. Credit, 1 hour each semester.

355, 356, 455, 456 *Men's Glee Club*. Experience in rehearsal and performance of music for male voices. Public performances. Open to male students of any of the colleges. Prerequisites: Courses to be taken in numerical order and permission of the conductor. Credit, 1 hour each semester.

361, 362, 461, 462 *Symphonic and Marching Band*. Membership in the Symphonic and Marching Band is open to all students in the colleges who can qualify on the basis of auditions with the director. In addition to the staging of formations and drills for football games and other events, the student is introduced to the great masterpieces of symphonic band literature over a period of four years. Five times a week. Credit, 1 hour each semester.

371, 372, 471, 472 *Opera Workshop*. Rehearsal and performance of operatic works. Study of practical production problems in the musical theatre. Several public productions yearly. Prerequisites: Courses taken in numerical order and permission of the instructor. Open to students of any of the colleges. Credit, 1 hour each semester.

381, 382, 481, 482 *Chamber Music Ensembles*. String, brass, woodwind, percussion, keyboard, vocal and mixed ensembles. Prerequisite: Permission of instructor. Twice a week. Credit, 1 hour each semester.

511, 512, 513, 514 *Applied Music—Private Instruction in Major*. For the student who has had the equivalent of four years training in his major performing field, voice or instruments. Prerequisite: MP 412 or equivalent. Two lessons a week. Credit, 2 hours each semester.

521, 522, 523, 524 *Applied Music—Private Instruction in Minor*. For the student who has had the equivalent of four years training in his major or minor performing field. Prerequisite: MP 412 or 422, or permission of Department Head. One lesson a week. Credit, 1 hour each semester.

539 *Advanced Conducting*. The study and practice of advanced baton technique for band and orchestra. Score reading, mechanics of conducting, individual criticisms of style. Prerequisite: major in Music or Music Education. Credit, 2 hours.

## Music

MU 100 *Fundamentals of Music Notation*. To provide non-music majors with sufficient symbol literacy to begin work in the field of musical learning. No credit for music majors. Credit, 2 hours.

105 *Music in Living*. The function of music in social, political, and cultural developments past and present. The relationship of

music to various aspects of life and the other arts. For students not majoring in music. Credit, 2 hours.

107 *Introduction to Music*. The correlation of music with literature, science, and art. A non-technical course in the humanities primarily created for non-music majors. Credit, 2 hours.

121, 122, 221, 222 *Integrated Theory*. Covers sight singing, dictation, ear training, keyboard and written theory, developing understanding and skills in a manner designed to create literate musicians. This is a communications subject which teaches the reading symbols used to convey all musical meaning. Five times a week. Credit, 3 hours each semester.

123 *Rhythm*. A basic course covering the essentials of rhythmic notation and production which are necessary for quick learning of all advanced skills and development of sight reading facility. Credit, 1 hour.

211, 212 *Kindergarten and Elementary Music Methods*. A sequence planned for education students following the kindergarten-primary or elementary curricula. Prepares teachers to teach their own classroom music. Previous musical training not required. Prerequisite: Courses taken in order or MU 100 may be substituted for 211. Credit, 2 hours each semester.

231 *Keyboard Harmony*. Melodic, harmonic, and rhythmic elements of music. Includes scales, intervals, triads, cadences, notation and dictation. Prerequisites: MP 111, 112 (piano). Credit, 2 hours.

232 *Keyboard Harmony* Seventh chords, key relationship, modulation, and dictation. Prerequisite: MU 231. Credit, 2 hours.

241, 242 *Musicology*. History and literature of music, designed to give perspective in judgments, based upon essential information and understanding as well as covering sources of information. Three times a week. Credit, 2 hours each semester.

311, 312 *Classroom Music in the Elementary School*. Designed to prepare education majors to teach their own classroom music in the kindergarten, primary, and elementary grades. Previous musical training not required. Prerequisite: Courses taken in order. Credit, 3 hours each semester.

321 *Modern Harmony*. Theory and analysis of contemporary harmonic and tonal systems. The uses of dissonance growing from techniques of Moussorgsky, Debussy, and Wagner to Schoenberg, Bartok, Stravinsky and Hanson; the Hindemith Root Theory; the Four Principles of Sounding Relationship; Dissonant Contact Theories. Prerequisite: MU 222. Credit, 2 hours.

323 *Counterpoint*. Strict counterpoint in all species in two, three, and four or more parts. Creative writing on original cantifermi. Prerequisite: MU 331 or 222. Credit, 2 hours.

324 *Counterpoint*. A continuation of MU 323. Combined forms; double and triple with free parts. Original compositions in the style for organ or piano. Trios for piano and strings, woodwinds, or string quartet. Prerequisite: MU 323. Credit, 2 hours.

331 *Harmony*. Altered chords, modulation, form, and creative writing. Credit, 2 hours.

341, 342 *Musicology*. History and literature of music, designed to give perspective in judgments, based upon essential information and understanding as well as covering sources of information. Three times a week. Credit, 2 hours each semester.

353 *Survey of Music Literature and History*. A comprehensive study of the composers and the instrumental literature of the Classic and Romantic periods through the works of Brahms and his contemporaries. Prerequisite: MU 242. Open only to music majors and minors, except by special permission of the instructor. Credit, 2 hours.

355, 356 *History of Music*. Survey of music from Grecian sources to the twentieth century. Prerequisite: MU 241, 242. Open to music majors only, except by special permission of the instructor. Credit, 2 hours each semester.

421g, 422g *Aural Theory*. Aural recognition of chords in all positions; hearing skills developed by harmonic, rhythmic and melodic dictation, use of clefs for transposition and sight singing; development of intervallic, functional and chordal hearing. Prerequisite: MU 222 or 331. Five times a week. Credit, 2 hours each semester.

423g *Composition*. Creative writing in the smaller forms including harmonic textures and use of contrapuntal devices. Prerequisites: MU 331, 323 or 222. Credit, 2 hours.

424g *Composition*. A continuation of MU 423. Concentrated creative writing for voice and instrumental works. To include solo and ensemble compositions. Prerequisite: MU 423. Credit, 2 hours.

427g *Form and Analysis*. Harmonic and structural analysis of musical forms. The study of simpler forms to and including the Sonata Allegro form. Prerequisite: MU 222. Credit, 2 hours.

428g *Form and Analysis*. A continuation of MU 427. Includes the larger forms, such as symphonic and tone poems with free adaptations and combinations of all forms. Prerequisite: MU 427. Credit, 2 hours.

431g *Choral Arranging*. Arrangements for three, four, and more parts mixed choirs and gleees; accompaniments; special effects. Emphasis upon choral requirements of school and radio performance. Prerequisite: MU 331 or 222. Credit, 2 hours.

433g *Instrumentation*. Theoretical and practical study of scoring for wind instruments in various combinations, ranging from small ensembles to the full band. Prerequisites: MU 331 or 222. Credit, 2 hours.

434g *Instrumentation*. A continuation of MU 433. Adds problems of scoring for the string section, and progresses to full scoring for symphony orchestra and symphonic band. Prerequisite: MU 433. Credit, 2 hours.

445g *Twentieth Century Music*. An approach, through recorded music and discussion, to the works of composers of the Twentieth century. Prerequisite: MU 342 or permission of the instructor. Three times a week. Credit, 2 hours.

451 *Vocal Repertoire*. A study of song material for all voices including works from the classical periods, the German lied and the French Art Song, opera and oratorio airs, and songs by contemporary composers. Discussions by members of the voice faculty, and selected examples will be performed by members of the class. Prerequisite: MU 212. Credit, 2 hours.

452 *Choral Literature*. A survey of choral music through all periods which is now available to choral directors for performance. Prerequisites: MU 324, 342, 321. Credit, 2 hours.

453 *Survey of Music Literature and History*. Continuation of MU 353. A comprehensive study of the composers and the important literature from the late Romantic period to the mid-twentieth century with emphasis upon the development of styles, forms, and contemporary trends in music. Prerequisite: MU 422. Open only to music majors and minors, except by special permission of the instructor. Credit, 2 hours.

454 *Chamber Music Literature*. An intensive study of the development of chamber music literature; the ensemble music of the Renaissance; the Baroque Suites; the contributions of Haydn and Mozart; Beethoven Quartets; important developments in the Romantic and Modern periods. Prerequisite: MU 239 or equivalent. Credit, 3 hours.

461g *Education Methods: Band and Orchestra*. Survey of wind, string, and percussion methods and materials used in the development of junior and senior high school bands and orchestras. Prerequisite: Twenty semester hours of music. Credit, 2 hours.

465 *Public School Music Survey*. For music majors in the B.A. in Education curriculum. Surveys the entire field of music education on the national, state, and local scale. Includes philosophy, curriculum, materials, and teaching methods. Credit, 3 hours.

480g *Methods of Teaching Music*. Methods of instruction, organization, and presentation of appropriate content in Music. Prerequisite: 2-SE 311 or concurrent registration. Credit, 3 hours.

523 *Advanced Composition*. Continued creative writing in the larger forms for chorus, orchestra, and band. Prerequisite: MU 424. Credit, 2 hours.

524 *Advanced Composition*. A continuation of MU 523. Concentrated writing in the larger forms, vocal and instrumental, making



use of modern harmonic devices. Prerequisite: MU 523. Credit, 2 hours.

525 *Pedogogy of Theory*. A comprehensive study of practices and principles of teaching music theory. Emphasis will be directed towards setting up the most desirable and practical offerings possible. Comparative studies of existing practices throughout the United States. Prerequisite: MU 222, or equivalent. Five times a week. Credit, 2 hours.

563 *The Marching Band—Fundamentals*. The basic drills and maneuvers for training a marching band; the drum major duties, alignment and position on the field, street marching, variations of regular formation, signals for cadence, step, playing, stopping and starting. Prerequisite: MP 262. Credit, 1 hour.

564 *The Marching Band—Pageantry*. The marching band; performances at athletic events; various formation, mechanics of stunts. Prerequisite: MU 563. Credit, 2 hours.

567 *Organization and Administration of High School Bands and Orchestras*. Organization problems, procedures and materials. Credit, 2 hours.

571 *Choral Procedures and Techniques*. An analysis of choral-vocal problems chiefly at the secondary school level and a study of materials for the small choral ensembles and the large chorus. Prerequisite: MP 339. Credit, 2 hours.

500 *Research Methods*. Credit, 3 hours.

590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

593 *Thesis*. Credit, 6 hours.

## Physics and Astronomy

WAGER (Chairman, Department of Physics and Astronomy),  
KEVANE, MEISTER, MORTENSEN, RAWLS, SCHROEDER, YALE.

### Physics

PH 101 *Introduction to Physics*. Survey of the fundamental principles of physics, presented with a minimum of mathematics, to give the student an understanding of the concepts of physics as applied to everyday life. Fee, \$4.00. Three lectures, 3 hours laboratory. Credit, 4 hours.

111\* *General Physics*. The fundamental principles of mechanics, heat, and sound presented with an emphasis on applications to medicine, dentistry, and other professional fields, except engineering. Prerequisites: MA 116 or 117 and MA 118. Fee, \$5.00. Three lectures, 3 hours laboratory. Credit, 4 hours.

\*Credit is allowed for one course only in each of the following groups: PH 111, 211; 112, 212.

- 112\* *General Physics*. The fundamental principles of magnetism, electricity, and light. Prerequisite: PH 111. Fee, \$5.00. Three lectures, 3 hours laboratory. Credit, 4 hours.
- 121 *Descriptive Astronomy*. A study of the solar system, planets, and stars from the observational and descriptive viewpoint. Credit, 2 hours.
- 211\* *Engineering Physics*. The principles of mechanics, heat, and sound, presented from the engineering viewpoint. Prerequisite or corequisite: MA 121. Fee, \$6.00. Four lectures, 1 recitation period, 2 hours laboratory. Credit, 5 hours.
- 212\* *Engineering Physics*. The principles of electricity, magnetism, light, and modern developments presented from the engineering viewpoint. Prerequisites or corequisites: PH 211 and MA 212. Fee, \$6.00. Three lectures, 1 recitation period, 2 hours laboratory. Credit, 4 hours.
- 221 *General Astronomy*. A study of the solar system, motions of the planets, eclipses, stars, galaxies, and an introduction to navigation and astrophysics. Prerequisite: PH 112. Credit, 3 hours.
- 261 *Introductory Modern Physics*. Fundamental principles of spectroscopy, X-rays, nuclear theory, cosmic rays, photoelectricity. Prerequisites: PH 112 or CH 115, or equivalent; algebra and trigonometry. Credit, 3 hours.
- 321 *Physical Mechanics*. A study of mechanics from the viewpoint of the Calculus. Prerequisites: MA 212 and PH 112, or equivalent. Credit, 3 hours.
- 331, 332 *Principles of Electricity and Magnetism*. A study of electrostatics, magnetostatics, direct current theory, alternating current theory, propagation of electromagnetic waves and related topics. Prerequisite: PH 112 and MA 212 or equivalent. Credit, 3 hours each semester.
- 333 *Electron Physics*. A study of the principles and theories of electron motion in solids and plasmas, electron emission and principles of circuit theory. Prerequisite or corequisite: PH 332. Credit, 3 hours.
- 351 *Intermediate Light and Optics*. A study of geometrical and physical optics with an introduction to spectroscopy. Prerequisites: MA 212 and PH 112, or equivalent. Credit, 3 hours.
- 423g *Continuum Mechanics*. Analysis of stress and strain, velocity conditions, compatibility equations, elasticity, torsion, plate problems. Prerequisite: 4-ES 321; MA 220. Credit, 3 hours (Same as 4-ES 417.)
- 424g *Fluid Power*. A study of hydrostatics and hydrodynamics. Viscous and turbulent flow. Hydraulic pumps and motors, circuit design, and the application of hydraulic power. Prerequisite: 4-ES 371. Two lectures, 3 hours laboratory. Credit, 3 hours. (Same as 4-ME 451.)

\*Credit is allowed for one course only in each of the following groups: PH 111, 211, 112, 212.

- 431g *Radiating Systems and Propagation.* Radiation and field theory; emphasis on basic theory and concepts. Prerequisite: 4-EE 416. Credit, 3 hours. (Same as 4-EE 417.)
- 432g *Transistor Theory Circuits.* Semi-conductor theory and circuit applications; emphasis on recent contributions to the theory. Prerequisite: 4-EE 325. Fee, \$6.00. Three lectures, 3 hours laboratory. Credit, 4 hours. (Same as 4-EE 460.)
- 441g *Intermediate Heat and Thermodynamics.* A study of the principles of heat energy with an introduction to thermodynamics. Prerequisites: MA 122 and PH 112, or equivalent. Credit, 3 hours.
- 442g *Kinetic Theory of Gases.* A study of the classical theories of Maxwell-Boltzmann with an introduction to the recent theories of Fermi-Dirac and Bose-Einstein. Prerequisites: MA 122 and PH 112, or equivalent. Credit, 3 hours.
- 461g *Atomic Physics.* A study of extra-nuclear phenomena from an advanced viewpoint. Prerequisites: PH 112, MA 220 or 221, or equivalent. Credit, 3 hours.
- 462g *Nuclear Physics.* Study of intra-nuclear phenomena from an advanced viewpoint. Prerequisites: PH 461 or equivalent. Credit, 3 hours.
- 463g *Nuclear Instrumentation.* Principles of operation of apparatus for measuring ionizing radiations. Prerequisite: 1-PH 462. One lecture and 3 hours laboratory. Credit, 2 hours. (Same as 4-NE 421.)
- 465g *Nuclear Reactor Theory.* Principles of chain reactors, neutrons, conditions for criticality, reactor dimensions, time dependent reactor behavior. Prerequisite: 4-NE 411. Credit, 3 hours. (Same as 4-NE 431.)
- 466g *Reactor Theory.* Mathematical and physical description of neutron motion and reactor behavior; transport theory, and diffusion theory. Prerequisite: 4-NE 431. Credit, 3 hours (Same as 4-NE 432.)
- 467g *Radiation Hazard and Protection.* Safe limits of exposure and tolerance dosage of alpha, beta, gamma, and neutron radiation; monitoring procedures; calculation of exposure doses and protective methods. Prerequisite: PH 462. Credit, 3 hours. (Same as 4-NE 441.)
- 468g *Reactor Design.* Engineering design of typical reactors; homogeneous, stationary power, power breeders. Prerequisite or concurrent registration; 4-NE 431. Credit, 3 hours. (Same as 4-NE 451.)
- 490g *Advanced Physical Measurements.* Prerequisites: PH 112 or equivalent, and consent of instructor.
- Mechanics. Fee, \$5.00. Three hours laboratory. Credit, 1 hour.
  - Heat and Sound. Fee, \$5.00. Three hours laboratory. Credit, 1 hour.

- Electricity and Magnetism. Fee, \$10.00. Six hours laboratory. Credit, 2 hours.
- Optics and Light. Fee, \$5.00. Three hours laboratory. Credit, 1 hour.
- Modern Physics. Fee, \$5.00. Three hours laboratory. Credit, 1 hour.

541 *Thermodynamics and Introduction to Statistical Mechanics.* A study of the laws of thermodynamics, entropy, thermodynamic potentials with applications to gases and solutions; chemical equilibria and phase rule; principles of statistical mechanics and application to thermodynamic systems. Prerequisite: Consent of instructor. Credit, 3 hours.

561, 562 *Modern Physics.* A study of relativity, quantum theory, wave mechanics, atomic structure, atomic and molecular spectra, radioactivity and nuclear phenomena, cosmic radiation, and related topics. Prerequisite: Consent of instructor. Credit, 3 hours each semester.

571 *Theoretical Physics.* Topics chosen from the fields of elasticity and elastic waves; physical mechanics as exemplified by the work of Newton, Lagrange, Euler, and others; hydrodynamics, etc. Prerequisite: Consent of instructor. Credit, 3 hours.

572 *Theoretical Physics.* A continuation of PH 571 with topics chosen from the fields of electrostatics, magnetostatics, paramagnetism, ferroelectricity, propagation of electromagnetic waves, etc. Prerequisite: Consent of instructor. Credit, 3 hours.

576, 577 *Quantum Mechanics.* A study of the Schroedinger wave equation, eigenfunctions and eigenvalues, collision theory, approximation methods with applications to atoms, molecules, solids, radiation, and related topics. Prerequisite: Consent of instructor. Credit, 3 hours each semester.

581 *Solid State Physics.* Topics chosen from crystallography, free electron theory, band theory, etc. Prerequisite: Consent of instructor. Credit, 3 hours.

582 *Solid State Physics.* A continuation of PH 581, with the topics chosen from Brillouin zones, solid types and properties, semi-conductors, solid rectifier and transistor physics, etc. Prerequisite: Consent of instructor. Credit, 3 hours.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

### Physical Science

PL 110 *Physical Universe.* The universe as a unit; the stars; the solar system; the earth and the atom. The nature of energy and matter and relations between atoms, elements and compounds.

Designed for general education. Does not meet science requirement in preprofessional curriculums. Fee, \$2.00. Credit, 4 hours.

320 *Science for the Elementary School.* Development of an integrated science program in each grade of the elementary school. Lectures, library reports, class discussion, field observation and a three-day camping trip. Prerequisites: BI 100; PL 110. Fee, \$3.00. Credit, 3 hours.

410g *History of the Physical Sciences.* A study of the growth of astronomy, chemistry, and physics; and of the scientists who have made outstanding contributions, and of the effect of these contributions on man's life. Credit, 3 hours.

480g *Methods of Teaching Physical Science.* Methods of instruction, organization, and presentation of appropriate content in Physical Science. Prerequisite: 2-SE 311 or concurrent registration. Credit, 3 hours.

500 *Research Methods.* Credit, 3 hours.

## Psychology and Philosophy

SKINNER (Chairman, Department of Psychology and Philosophy),  
BALL, BARDRICK, COPPOCK, DOLPHIN, DORTON, ELIAS, GURNEE,  
STAATS, SYDNEY SMITH, VOTICHENKO, WICKENS, YOUNG.

### Psychology

PY 100 *Elementary Psychology.* Considers such activities as emotions, motives, thinking, observing, learning, and intelligence, and their role in the development and adjustment of the individual. Credit, 3 hours.

112 *General Psychology.* Scientific psychology and the principles of behavior. Readings in general psychology with emphasis on scientific and experimental studies. Lecture, demonstrations, and class experiments. Prerequisite: PY 100, (required of majors). Credit, 3 hours.

114 *Mental Hygiene.* Factors necessary for good mental health; basic needs of the individual; prevention of mental disorders and correction of personality disorders in their early stages. Prerequisite: PY 100. Credit, 2 hours.

131 *Applied Psychology.* A survey course in which the applications of psychological principles and researches in several fields of human endeavor are discussed. Prerequisite: PY 100. Credit, 3 hours.

232 *Business Psychology.* A consideration of the problems of human behavior in the business setting; the contributions of psychology to the understanding and solution of these problems. Prerequisite: PY 100. Credit, 3 hours.

- 281 *Introduction to Human Growth and Development.* A survey of the physical, mental, emotional, and social growth and development of the child from birth to adulthood, including field trips and laboratory experiences. Prerequisites: SO 101; PY 100. Credit, 2 hours.
- 322 *Clinical Psychology.* Survey of clinical work in diagnosis and adjustment of problem children. Educational and other adjustment problems are diagnosed and remedial measures suggested. Prerequisite: PY 281. Credit, 3 hours.
- 333 *Techniques of Selection in Industry.* Psychological methods of determining the qualifications of a worker for a job. Emphasis on the methods used to improve the usefulness of tests, interviews, and application blanks in personnel work. Prerequisite: PY 100. Credit, 3 hours.
- 341 *History of Psychology.* Major problems and trends of modern psychology traced from their beginnings to the present including the development of the modern scientific approach. Prerequisite: 12 hours in psychology. Credit, 3 hours.
- 343 *Experimental Psychology.* A survey of typical experiments in psychology including reaction time, perception, learning and problem solving. Emphasis on methods of experimentation. Demonstrations. Prerequisite: PY 100. Two lectures, 3 hours laboratory. Credit, 3 hours.
- 362 *Psychology of Personality.* The elements of personality, and the conditions which determine the pattern and the direction of its growth. Methods of judging personality and character. Prerequisite: at least 3 courses in psychology. Credit, 3 hours.
- 367 *Social Psychology.* The behavior of man in his social relations. Problems of crowd behavior, social control, propaganda, suggestion, imitation, competition, cooperation, and leadership. Prerequisites: PY 100 and SO 101. Credit, 3 hours.
- 371 *Educational Psychology.* An analysis and application of psychology facts and laws particularly relevant to the problems of education. Prerequisite: PY 100. Credit, 3 hours. (Same as 2-EP 422.)
- 382 *Child Psychology.* Development, growth and psychological activities of the child. Problems of adjustment and child training. Survey of experimental and observational studies. Prerequisite: PY 100. Credit, 3 hours.
- 383 *Psychology of Adolescence.* Methods and findings of recent studies of the development, growth and problems of the adolescent, with implications for education. Prerequisite: PY 281 or 371. Credit, 2 hours.
- 421g *Abnormal Psychology.* Study of the neuroses, psychoses, and mental deficiency. Dynamics of abnormal behavior. Prerequisites: twelve hours in psychology and sociology. Credit, 3 hours.

423g *Clinical Psychology*. A continuation of PY 322 with particular emphasis on the areas of mental deficiency, speech pathology and physical handicaps. Diagnosis and treatment is emphasized. Opportunity will be given for students to pursue some topic of special interest. Prerequisite: PY 322 or by permission. Credit, 3 hours.

424g *Clinical Techniques*. Principles and techniques of clinical diagnosis including therapy, counseling, interviewing, projective techniques, and diagnostic tests. Prerequisite: PY 322. Credit, 3 hours.

442g *Recent Problems in Psychology*. Seminar based on readings and discussions of contemporary problems in psychology. Prerequisite: 12 hours in psychology. Credit, 2 hours.

446g *Directed Observation and Experience*. Supervised observation and experience in work of a psychological nature; observation and experience in either a school, State or County institution according to the interests, needs, and abilities of the student. Prerequisites: A major in Psychology and the completion of 80 semester hours, or a graduate student. (Enrollment by permission only.) Credit, 3 hours.

451g *Psychology of Reading*. A study of the nature of the reading process. Specific emphasis on the psychology of visual and auditory perception and of the development of the total communication structure. Prerequisites: PY 281, 371, or equivalent. Credit, 3 hours.

452g *Diagnosis and Remediation in Reading Disability*. A study of the physiological, psychological and psycho-cultural factors in reading problems. Special emphasis on diagnosis at all levels, and on appropriate therapy. Prerequisites: PY 491, 451. or by permission of the instructor. Credit, 3 hours.

453g *Clinical Practice in the Study of Severely Retarded Readers*. Laboratory practice in the administration and interpretation of diagnostic tests, and in remedial procedures in reading on the elementary and secondary school levels. Prerequisites: PY 493, PY 451 or by permission of the instructor. Fee, \$2.00. Credit, 3 hours.

463g *Psychology of Learning*. A consideration of principles and theories of learning; conditioning and other basic forms of learning; experiments and principles making for effective learning. Prerequisite: 12 hours in psychology. Credit, 3 hours.

464g *Physiological Psychology*. A study of the physiological basis of behavior, including the nervous system and nerve physiology, special senses, motor response mechanisms, learning, and emotions. Prerequisite: Fifteen hours of psychology. Credit, 3 hours.

465g *Psychology of Motivation and Emotions*. An analysis of underlying motives and emotions functioning in human development. Emphasis is placed on applications to educational and clinical psychology. Prerequisite: PY 322. Credit, 2 hours.

484g *Directed Experiences with Infants and Young People*. A study of the methods in evaluating the development of infants and young children, directed experiences, and special studies adapted to the needs of the student. Prerequisites: PY 281, 382, 403. Credit, 3 hours.

485g *Behavior Problems and Juvenile Delinquency*. A review of investigations on behavior problems and delinquency; factors contributing to delinquency; prevention and correction; case studies. Prerequisite: 4 courses in psychology and sociology. Credit, 2 hours.

491g *Tests and Measurements*. Evaluation and measurement of the individual in school and other experiences. Analysis and construction of tests; meanings of scores; diagnosis of individual strengths and weaknesses; remedies suggested for the individual having difficulty. An appreciation of the need for adequate measurement before evaluation. Prerequisite: PY 371. Credit, 3 hours.

492g *Statistical Methods*. Interpretation and application of statistics as employed in education and psychology. Measures of central tendency, variability, sampling, reliability, and correlation. Prerequisite: PY 491. Two lectures, 3 hours laboratory. Credit, 3 hours.

493g *Individual Mental Testing*. A study of the Stanford-Binet and other scales, and of performance tests. Practice in giving these tests. Prerequisites: PY 491, 371, 322, their equivalents or by permission. Fee, \$1.00. Three lectures, 2 hours laboratory. Credit, 3 hours.

525 *Psychology of Interviewing*. Survey of interviewing principles applied to counseling, therapy, informational interviewing, employment techniques, and public opinion surveys. Actual practice provided. Prerequisite: at least 5 hours in clinical sequence. Credit, 2 hours.

526 *Theory and Practice of Clinical Counseling*. A survey of the major theories and techniques underlying psychotherapy including psychoanalysis, directive therapy, non-directive therapy, group therapy, play therapy, psychodrama, etc., together with their possible application to the school situation. Credit, 2 hours.

527 *Diagnostic Methods*. An intensive study of the diagnostic techniques and skills necessary for measurement and evaluation. Presupposes a knowledge of psychometrics and the interpretation of psychological data. Prerequisites: PY 421, 424, 493. Credit, 3 hours.



- 536 *Personnel Techniques and Problems*. Application of psychological principles of student, business and industrial personnel problems. Prerequisite: at least eight hours in psychology. Credit, 2 hours.
- 545 *Systematic Psychology*. The development of a consistent approach to psychology; a survey of Behaviorism, Phenomenology, Gestalt and other systems in modern psychology. Theory construction and experiment and the relation of psychology to the social and physical sciences, and of logic and mathematics in psychology. Prerequisite: PY 341. Credit, 3 hours.
- 547 *Directed Observation and Experience*. Continuation of PY 446. (Enrollment by permission only). Credit, 3 hours.
- 568 *Group Dynamics*. Consideration of the psychological theories and methods of study in various forms of collective behavior including group leadership, group effectiveness, communication within groups, and relations between groups and individual members. Prerequisite: PY 367 or 3-MG 311. Credit, 2 hours.
- 572 *Advanced Educational Psychology*. Review of scientific publications on the facts, laws, and theories of learning, with reference to problems of education. Prerequisites: PY 371, 491. Credit, 2 hours. (Same as 2-EP 511).
- 573 *Recent Studies in Educational Psychology*. Survey of the latest experimental reports relevant to current problems of teaching. Prerequisites: PY 371, 491. Credit, 2 hours. (Same as 2-EP 566.)
- 575 *Psychology and Education of Exceptional Children*. Psychological principles essential for the understanding and education of exceptional children. Credit, 2 hours.
- 576 *Theory and Function of Test Construction*. Extensive treatment of the theory and functions of measurement in education and psychology and techniques of test construction. Prerequisites: PY 371, 491, 492. Credit, 3 hours.
- 577 *Aptitudes and Aptitude Tests*. The theory of aptitudes, types of aptitude tests, and use of aptitude tests in the guidance program. Prerequisite: PY 491. Credit, 2 hours.
- 578 *Individual Differences*. The nature and extent of psychological differences among individuals and groups, and their significance for curriculums and educational methods. Prerequisites: PY 371, 491. Credit, 2 hours.
- 500 *Research Methods*. Credit, 3 hours.
- 590 *Reading and Conference*. Credit, 3 hours.
- 591 *Seminar*. Credit, 3 hours.
- 592 *Research*. Credit, 3 hours.
- 593 *Thesis*. Credit, 6 hours.

## Philosophy

PI 101 *Introduction to Philosophy*. Great thought in Western culture, ancient, and modern times: Plato and Aristotle to Hume and Kant, James and Dewey. Credit, 3 hours.

211 *Principles of Ethics*. The meaning of right and wrong, the development of moral understanding, the ethical foundations of personal and social relations. Prerequisites: PY 100; PI 101. Credit, 3 hours.

212 *Social Philosophy*. Important contributions to social thinking, with special emphasis on the ideological conflicts of modern times. Prerequisite: PI 101 or consent of instructor. Credit, 3 hours.

221 *Readings in Ancient Philosophy*. Readings in the philosophical classics of ancient Greece and Rome with special emphasis upon the works of Plato and Aristotle. Prerequisite: PI 101. Credit, 2 hours.

222 *Ancient and Medieval Philosophy*. Readings in the Pre-Socratic Philosophies, Socrates and Plato, Aristotle; the Epicureans and Stoics, Aquinas and the Scholastics. Prerequisite: PI 101. Credit, 3 hours.

223 *Modern Philosophy*. Readings from Descartes, Hume, Berkeley, Hegel, Kant, Russell, Whitehead and others, Philosophers of the Twentieth Century. Prerequisite: PI 101. Credit, 3 hours.

228 *Contemporary Philosophy*. An examination of the problems in modern philosophy; Pragmatism, Existentialism, Positivism, Realism, and other kinds of modern doctrine. Prerequisites: PI 101 or consent of the instructor. Credit, 3 hours.

231 *Logic*. Principles and methods of correct thinking. Examples of logical fallacies and ways of detecting them. (Not open to freshmen.) Credit, 3 hours.

235 *Philosophy of Science*. An examination of the ideas basic to modern science, and of their impact on our culture, on the progress of science, on morality, and on education. A clarification of scientific description, explanation, prediction, and theory formation. An examination of causality, probability, and determinism. Credit, 3 hours.

241 *Philosophy of Religion*. An inquiry concerning the nature of religion, various conceptions of God, good and evil, revelation and mysticism. Great philosophers, theologians and psychologists including James, Tillich, Niebuhr, Sweitzer, Jung, Ghandi and Marcel are considered. Prerequisite: PI 101. Credit, 3 hours.

415g *Ethical Philosophies*. An examination of practical ethics with reference to great ethical thinkers such as Aristotle, Kant, Confucius, Buddha, Kierkegaard, Sweitzer and modern psychological doctrine. Prerequisite: 12 hours in philosophy or by permission. Credit, 3 hours.

## Sociology and Anthropology

PERRIL (Chairman, Department of Sociology and Anthropology),  
HARWARD, JEFFREY, LINDSTROM, STEWART.

### Anthropology

AN 111 *Elementary Anthropology*. Primitive society, religion, material culture, the origin and antiquity of man and civilization, modern races, the linguistic phases of culture, and the principles of anthropology. Credit, 3 hours.

221 *Indians of the Southwest*. Culture of living Indian tribes—Navajo, Hopi, Pima, Papago, etc. Southwestern archaeology. Social problems of the Southwestern Indians. Credit, 3 hours.

231 *Archaeological Field Methods*. The excavation of archaeological sites and the recording and interpretation of data. Includes field experience in this locality. Fee, \$3.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

312 *Peoples of the World*. An ethnographic survey of the peoples and cultures of Africa, Eurasia, and Oceania. Prerequisite: SO 101 or AN 111. Credit, 3 hours.

313 *Primitive Society*. The development and varieties of human societies; a survey of primitive social institutions; the role of property in primitive society; the problem of control and authority in society. Prerequisite: AN 111 or SO 101. Credit, 2 hours.

314 *Primitive Religion*. The origins, elements, forms, and symbolism of religion; a comparative survey of primitive religious beliefs and ceremonies; the place of religion in the total culture. Prerequisite: AN 111 or SO 101. Credit, 2 hours.

321 *Indians of Mexico and Peru*. Archaeology and ethnology of the Mayas, Aztecs, Chibchas, Incas. Present day tribes of Middle America. Social problems of Mexican and Peruvian Indians. Prerequisite: AN 111 or SO 101. Credit, 3 hours.

331 *Prehistory*. The development of Old World cultures from the Old Stone Age through the Iron Age. Prerequisite: SO 101 or AN 111. Credit, 2 hours.

332 *Southwestern Archaeology*. The development of prehistoric cultures in the Southwest; early man and the Hohokam, Mogollon, Basket Maker and Pueblo cultures. Prerequisite: SO 101 or AN 111. Credit, 3 hours.

341 *Physical Anthropology*. Fossil men, race classification and distribution, racial history and race problems, man's place in the animal kingdom, human heredity. Prerequisite: AN 111 or SO 101. Credit, 2 hours.

411g *Social Anthropology*. Social organization, social institutions, and cultural diffusion; acculturation, culture and personality, the community study, selected primitive cultures. Prerequisite: SO 101 or AN 111. Credit, 3 hours.

412g *American Minority Peoples*. Problems of racial, national and religious minorities in the United States. Prejudice, acculturation and assimilation. Prerequisite: SO 101 or AN 111. Credit, 3 hours.

414g *Acculturation and Applied Anthropology*. The dynamic processes of culture contact. The impact of Western civilization upon native societies; anthropological problems in colonial and native administration; applied anthropology in the modern world. Prerequisite: AN 111 or SO 101. Credit, 3 hours.

421g *The American Indian*. Archaeology, ethnology, and linguistic relationship of the Indians of North and South America. Current social and economic problems of the Indians. Prerequisite: SO 101 or AN 111. Credit, 3 hours.

### Sociology

SO 101 *Sociology*. Scientific study of society and culture. Designed as a general education course for freshmen and sophomores. No prerequisite. Credit, 3 hours.

213 *Modern Social Problems*. Current problems of race relations, poverty and unemployment, mental disease, mental deficiency, etc. Prerequisite: SS 101, 102 or SO 101. Credit, 3 hours.

312 *Social Change*. Study of patterns of social change, resistance to change, and change-producing agencies and processes. Prerequisite: SO 101 or SS 101, 102. Credit, 3 hours.

321 *Marriage and the Family*. The family is interpreted as a basic social institution. The development of the family from an economic unit to a companionship is related to cultural factors. Emphasis is placed upon socialization of the individual and his adjustment to the social order as major functions of the family. Prerequisite: SS 101, 102 or SO 101. Credit, 3 hours.

331 *Rural Sociology*. Rural regions of the U.S.; rural people; rural social organizations. Emphasis on rural life in Arizona. Prerequisite: SS 101, 102 or SO 101. Credit, 2 hours.

332 *Urban Sociology*. Growth, characteristics, and problems of the modern city. Emphasis on urbanization in Arizona. Prerequisite: SS 101, 102 or SO 101. Credit, 2 hours.

333 *Population Problems*. Theories of population growth; births, death, migration; population policies. Prerequisite: SS 101, 102 or SO 101. Credit, 3 hours.

361 *Industrial Sociology*. Social and cultural analysis of industry. Attention given to occupational roles, status, and social participation of workers. Prerequisite: SO 101 or SS 101, 102. Credit, 3 hours.

441g *Principles of Criminology*. Causation of crime; juvenile delinquency; classes of crime; criminal as a social type. Prerequisite: SS 101, 102 or SO 101. Credit, 3 hours.

442g *Penology*. Theories of punishment; methods of dealing with convicts; police, courts, prisons, probation, and parole. Prerequisite: SS 101, 102 or SO 101. Credit, 3 hours.

### Social Sciences

SS 101, 102 *Introduction to the Social Sciences*. An integrated course including introductory material from the fields of sociology, anthropology, politics, government, and economics. Enrollment limited to Freshmen and Sophomores. Credit, 3 hours each semester.

480g *Methods of Teaching Social Sciences*. Methods of instruction, organization, and presentation of appropriate content in Social Sciences. Prerequisite: 2-SE 311 or concurrent registration. Credit, 3 hours.

### Social Welfare

SW 211 *Introduction to Social Work*. A survey of social welfare services with consideration of the areas of social needs, the social agencies developed to meet them, their philosophy and methods. Credit, 3 hours.

212 *Introduction to Child Welfare*. A general survey of the child welfare field, with special reference to contemporary programs, such as aid to dependent children, rural child welfare services, foster home placement, day nurseries, children's homes, and adoption services. Credit, 2 hours.

321 *History of Social Welfare to the Social Security Act*. The history of private and public social welfare from colonial times to the Social Security Act, drawing on the English experience for background. Credit, 3 hours.

322 *Public Welfare*. A historical study of the development of public welfare on the national level from the Social Security Act to the present, with special emphasis on the Act and the amendments to it. Credit, 3 hours.

331 *Public Welfare*. The organization and functioning of modern public welfare on the state and local level with emphasis on the Arizona program. Recommended for those expecting to become Public Assistance workers in Arizona. Credit, 3 hours.

## Speech and Drama

ALBRIGHT (Chairman, Department of Speech and Drama),  
FRANK BYERS, HUBER, LAVIN, STITES, LORETTA WILLSON,  
VERA ZIMMERMAN.

### Drama

DR 111 *Introduction to Drama*. A study of the various types of drama with reference to their theatric representation. Credit, 3 hours.

112 *Acting*. Reading in theory; laboratory projects. Credit, 3 hours.

311 *Creative Dramatics*. Methods of making a play from a lesson or story, helping children to improvise their own roles; selection of literature and subject matter suitable for play making. Laboratory work with school children during latter part of course. Prerequisite: SE 120 or 200. Credit, 3 hours.

312 *Children's Theatre*. Formal dramatics for children. The selection and production of plays and pageants suitable for children through the elementary grades. Prerequisite: SE 120 or 200. Credit, 3 hours.

313 *Play Production*. Problems connected with staging of plays in elementary and secondary schools. Prerequisites: SE 120 or 200; DR 111. Credit, 3 hours.

321 *Radio T-V Drama*. The production of both radio drama and television drama, with emphasis on acting techniques appropriate to each form. Prerequisite: RT 230. Credit, 3 hours. (Same as RT 321.)

### Speech

SE 120 *Speech Fundamentals*. An introduction to the physical and functional bases of speech production. Required of Speech majors and minors. Credit, 2 hours.

200 *Elements of Speech*. Adjustment to the speech situation; obtaining and organizing material. The conversational mode; articulation, pronunciation, and tone; bodily movement. Not open to freshmen. Credit, 2 hours.

211 *Public Speaking*. Organization and delivery of various types of speeches. Emphasis on types which occur most often in everyday life. Prerequisite: SE 200 or 120 or consent of instructor. Credit, 2 hours.

213 *Principles and Methods of Discussion*. The use of reflective thinking in learning and policy determining groups. The panel, dialogue, symposium, and forum-lecture. Prerequisite: SE 120 or 200. Credit, 2 hours.

214 *Intercollegiate Debate*. Preparation for and participation in intercollegiate debates. Prerequisite: consent of instructor. Credit, 2 hours.

221 *Voice and Diction*. A course designed to develop and improve the speaking voice. Background discussion and individual and group exercises and drills. Prerequisite: SE 120 or 200. Credit, 2 hours.

230 *Radio and Television Speech*. An analysis of the growth and development of radio and television and a study of operational procedure in stations, microphone delivery and practice in the utilization of sound, music, and scripts. Preparation and presentation of specialized types of radio speaking. Prerequisite: SE 200 or 120. Credit, 3 hours. (Same as RT 230.)

241 *Oral Interpretation*. Techniques of the reading aloud of prose, poetry, and drama. Prerequisite: SE 120 or 200. Credit, 3 hours.

311 *Business and Professional Speech*. A study of business and professional speech situations. Conversations; interviews; conferences; speeches of good will, to inform, and to persuade. Reading written reports; radio speaking; and banquet speaking. Prerequisite: SE 120 or 200. Credit, 3 hours.

312 *Principles of Argumentation*. Construction and delivery of various types of argumentative speeches. Essential to students engaging in intercollegiate debate. Prerequisite: SE 120 or 200. Credit, 2 hours.

313 *Speech Composition*. Practice in the organization and compositional development of speeches. Prerequisite: SE 120 or 200. Credit, 2 hours.

315 *Intercollegiate Debate*. Continuation of SE 214. Prerequisite: SE 214. Credit, 2 hours.

316 *Intercollegiate Debate*. Continuation of SE 315. Prerequisite: SE 315. Credit, 2 hours.

341 *Advanced Oral Interpretation*. A further and more technical study of the art of reading aloud effectively from prose, poetry, and drama. Prerequisite: SE 241. Credit, 3 hours.

421g *Speech Correction*. Cause and correction of disorders of speech. Prerequisite: SE 120 or 221. Three times a week. Credit, 3 hours.

423g *Clinical Practice in Speech Correction*. A laboratory course consisting of case treatment of speech disorders in the College Speech Clinic. Prerequisite: SE 421g. Credit, 1-3 hours. Note: This course may be taken for more than one semester.

424g *Phonetics*. Study of phonetics, including phonetic symbols, the production, the general characteristics and the application of the sounds of American speech to the acquisition and teaching of good pronunciation. Prerequisite: SE 200. Credit, 2 hours.

## Technology

BURDETTE (Head, Division of Technology), BOARD, BURK,  
CAVALLIERE, FINLEY, GOODWIN, KEITH,  
NEEB, PEABODY.

### Aeronautics

TA 180 *Aircraft Covering and Doping*. Fabric materials and testing, accessories, inspection of assemblies prior to covering, sewing of covers, rib stitching, repairs, hand doping, spray doping, including study of equipment used. Fee, \$4.00. One lecture, 3 hours laboratory. Credit, 2 hours.

183 *Theory of Flight*. A study of the forces on solids in motion relative to air, and the study of motion of air. Theory of lift and drag, stability performance, and control. Fee, \$4.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

186 *Aircraft Woodwork*. Materials used, rib construction, wing construction, spar splicing, alignment of drag truss, general wood repairs, inspection, testing, and use of power and hand tools. Fee, \$6.00. One lecture, 3 hours laboratory. Credit, 2 hours.

287 *Aircraft Engines*. Disassembly and assembly of aircraft engines including complete top overhaul. Timing of engines, synchronizing magnetos, carburetion, ignition and oil systems. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

288 *Airplane Mechanics*. Types of wood rib construction, use of power sewing machine, covering, doping and painting, riveting, and uses of metals for aircraft construction. Fee, \$6.00. Prerequisites: TM 164, 169. One lecture, 6 hours laboratory. Credit, 3 hours.

380 *C.A.A. Primary Ground School Course*. Sponsored by the Civil Aeronautics Authority. A total of 72 hours in class are required as follows: History of Aviation, 2 hours; Theory of Flight, 15 hours; Civil Air Regulations, 12 hours; Practical Air Navigation, 15 hours; Meteorology, 15 hours; Parachutes, 1 hour; Aircraft Power Plants, 5 hours; Aircraft Instruments, 5 hours; Radio Uses and Terms, 2 hours. Prerequisites: college algebra and trigonometry or equivalent. Flight instruction costs are extra. Fee, \$4.00. Credit, 4 hours.

381 *The Secondary Ground School Course*. A minimum of 128 hours in the following: Aerodynamics, 32 hours; Navigation, 48 hours; Powerplants, 48 hours. Prerequisite: TA 380. Passing of Government examination required for college grade. Fee, \$8.00. Credit, 8 hours.

384 *C.A.A. Ground Instructors Rating: Civil Air Regulations*. A detailed study of the various regulations affecting airmen including preparation of visual aid materials as an aid to making the subject more interesting. Fee, \$3.00. Credit, 3 hours.

### Technical Design

TD 101 *Engineering Production Language*. Practice reading blueprints and doing technical sketching. Study of symbols and production terms and standards. Prerequisite: H. S. algebra. Fee, \$2.00. One lecture, 3 hours laboratory. Credit, 2 hours.

202 *Advanced Engineering Drawing*. Applied topographic drawing, electronic diagrams, piping layouts, machine detailing, spur gear and plate cam drawings. Prerequisites: ME 111; MA 117 and 118. Fee, \$3.00. One lecture, 6 hours laboratory. Credit, 3 hours.

203 *Advanced Descriptive Geometry*. Three point perspective, warped surfaces, contoured surfaces, difficult intersections and



development, shades and shadows, and vector diagrams. Prerequisite: ME 112. Fee, \$3.00. One lecture, 6 hours laboratory. Credit, 3 hours.

305 *Machine Drawing*. Preparation of working detail and assembly drawings from simple layouts with emphasis upon use of standards and commercial catalogs in accordance with industrial practice. Prerequisite: ME 251; TD 202 or equivalent. Fee, \$3.00. One lecture, 6 hours laboratory. Credit, 3 hours.

402 *Structural Drafting*. Preparation of detail structural drawings including the strength design for the connections for riveted and welded structures according to A.I.S.C. specifications. Prerequisites: AC 261 or ES 211; ME 111. Fee, \$3.00. One lecture, 6 hours laboratory. Credit, 3 hours.

404 *Electronic Drafting*. Drafting applied to vacuum tubes, semiconductors, power circuits, including transformers and transmission lines. Use of standard templates. Prerequisites: TE 215; ME 111. Fee, \$2.00. One lecture, 3 hours laboratory. Credit, 2 hours.

406 *Elementary Machine Design*. Study of basic design principles as applied to keys, springs, bearings, couplings, flexible connectors, cams and bevel gears. Practice in making catalogue selection of parts and conventional drawing representation. Prerequisites: TD 305; AC 272; MA 120. Fee, \$4.00. Two lectures, 6 hours laboratory. Credit, 4 hours.

408 *Nomographics*. Application of graphics to the solution of engineering and research problems and to convey technical information to business and professional groups. Prerequisites: PH 111; MA 120; ME 112 or equivalent. Fee, \$2.00. One lecture, 3 hours laboratory. Credit, 2 hours.

### Electronics

TE 110 *Elementary Electricity*. Theory and application of direct and alternating current circuits. Two lectures, 3 hours laboratory. Fee, \$3.00. Credit, 3 hours.

210 *Radio Code*. Sending and receiving International Morse Code with a proficiency of ten words per minute required with commercial procedures. One lecture, 3 hours laboratory. Fee, \$2.00. Credit, 2 hours.

215 *Fundamentals of Electronics*. Fundamental electronic theory and circuits. Prerequisite: TE 110. Two lectures, 3 hours laboratory. Fee, \$6.00. Credit, 3 hours.

216 *Fundamentals of Electronics*. Fundamental electronic theory and circuits through transmitting systems. Prerequisite: TE 215. Two lectures, 3 hours laboratory. Fee, \$6.00. Credit, 3 hours.

310 *Direct Current Circuits*. Direct current power circuits and measurements. Prerequisite: TE 110. Two lectures, 3 hours laboratory. Fee, \$2.00. Credit, 3 hours.

- 311 *Alternating Current Circuits*. Alternating current power circuits and measurements. Prerequisite: TE 310. Two lectures, 3 hours laboratory. Fee, \$2.00. Credit, 3 hours.
- 313 *Vacuum Tubes and Transistors*. Principles, construction, and operation of vacuum tubes and transistors with circuit applications. Prerequisite: TE 110. Two lectures, 3 hours laboratory. Fee, \$4.00. Credit, 3 hours.
- 315 *Aircraft Radio*. Radio used in commercial, military, and private planes, and ground installations including navigational aids and requirements for the third class radio-telephone operator's license. Prerequisite: TE 110. Credit, 3 hours.
- 317 *Electronic Measurements*. Measuring equipment and techniques used in laboratory and industry. Prerequisite: TE 215. Two lectures, 3 hours laboratory. Fee, \$4.00. Credit, 3 hours.
- 319 *House and Industrial Wiring*. Installation of lighting and power circuits, underwriters' regulations, cable and conduit work, and estimation of cost. Prerequisite: TE 110. Two lectures, 3 hours laboratory. Fee, \$6.00. Credit, 3 hours.
- 410 *Electronics for Industry*. Theory and application of electronics to the industrial field. Prerequisite: TE 313. Credit, 2 hours.
- 412 *Elementary Microwaves*. Microwave theory and circuits with emphasis on typical television, telemetry, and radar applications. Prerequisites: TE 216, 313. Two lectures, 3 hours laboratory. Fee, \$6.00. Credit, 3 hours.
- 414 *Elementary Television*. Television principles and practices with emphasis on monochrome and color receivers. Prerequisites: TE 216, 313. Two lectures, 3 hours laboratory. Fee, \$6.00. Credit, 3 hours.
- 415g *Advanced Television*. Television principles and practices with emphasis on studio and transmitter equipment. Prerequisite: TE 410. Two lectures, 3 hours laboratory. Fee, \$6.00. Credit, 3 hours.
- 417 *Introductory Circuit Analysis*. Application of fundamental network theorems to electronic circuits. Prerequisite: TE 216. Credit, 3 hours.
- 418g *Broadcast Radio*. Preparation for first class radio-telephone operator's license and operation and maintenance of studio equipment and transmitters. Prerequisites: TE 216, or General Class Amateur License. Fee, \$3.00. Two lectures, 3 hours laboratory. Credit, 3 hours.
- 419g *Advanced Broadcast Techniques*. Advanced problems in radio and television studio and transmitter operation. Prerequisite: TE 418. Two lectures, 3 hours laboratory. Fee, \$3.00. Credit, 3 hours.

## Mechanics

TM 161 *Machine Shop*. Filing, drilling, turning, and polishing with hand tools, and general use of machines. Fee, \$6.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

162 *Machine Shop*. Making of projects using the complete machine equipment of the department. Fee, \$6.00. Prerequisite: TM 161. Two lectures, 3 hours laboratory. Credit, 3 hours.

164 *Sheet Metal Work*. Laying out and cutting of sheet metal; soldering, riveting; projects including utensils and toys. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

169 *Oxy-Acetylene Welding*. Various types of welds and positions. Cutting, layout and use of fluxes. Fee, \$10.00. One hour lecture, 6 hours laboratory. Credit, 3 hours.

173 *Automotive Electrical Equipment*. Fundamentals of electricity and magnetism and their relationship to the modern automobile, the ignition, starting, lighting, and charging systems, etc. Two lectures, 3 hours laboratory. Credit, 3 hours.

267 *Jigs and Fixtures*. Design and construction of various devices that facilitate shop production in quantities. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

274 *Basic Automotives*. Automobile engine, power transmission, brakes, front end, and chassis assemblies; their various parts and functions, disassembly and wear measurements. Fee, \$6.00. Credit, 3 hours.

276 *Operation, Repair, and Maintenance of Diesel Engines*. A course in the accepted industrial procedures used in the operation, maintenance and repair of diesel engines, including a study of compression and fuel ratios, methods of fuel injection, problems in pressure lubrication, and heating problems, together with a practical study of fuels and oils. Prerequisite: TM 161. Fee, \$6.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

364 *Sheet Metal*. Problems in roofing, cornice work, practical intersections, and use of sheet metal machines. Fee, \$6.00. One lecture, 6 hours laboratory. Prerequisite: TM 164. Credit, 3 hours.

369 *Electric Arc Welding*. Making satisfactory butt welds, lap welds, ridge welds. T-welds, flat, vertical, horizontal and overhead welding. Prerequisite: TM 169. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

371 *Auto Body Repair*. Welding, straightening, sanding, and re-finishing, the use of putty, solder and other materials. Fee, \$6.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

377 *Automobile Machine Work*. Cylinder boring, honing, and dual ignition systems. Prerequisite: TM 274. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

461g *Machine Shop*. Care and use of milling machines, the cutting of spur, worm and bevel gears. Plain and direct indexing. Cutters and their upkeep. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

462g *Machine Shop*. Planers, their care, methods of holding work, uses of fixtures, gauges, and tools. Adjustment of belting for speed and power. Prerequisite: TM 461. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

469g *Advanced Welding*. Designed to provide experience and content for students and teachers interested in becoming more specialized in the field of oxy-acetylene welding-cutting and electric arc welding. Includes specific problems, lectures, and field trips, and the study and performance of new material in the field of welding. Prerequisites: TM 169, 369. Fee, \$10.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

478g *Auto Testing and Tuning*. Instruments and methods used in industry. Emphasis on electrical equipment and carburetion, using manufacturers specifications. Prerequisites: TM 173, 274. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

### Industrial Arts

IA 103 *Basic Drawing*. Elements of orthographic projection. Fee, \$3.00. One lecture, 6 hours laboratory. Credit, 2 hours.

109 *Calculations*. Slide rule and technical problems. Credit, 2 hours.

121 *Introduction to Woodworking*. A comprehensive study of the history and development of hand tools; instructional techniques and objectives; knowledge of woods and construction activities. No machines. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

125 *Wood Turning*. Drills in spindle, face plate, and chuck work, with practice in finishing and polishing. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

133 *Plastics*. Practical use of plastics and their application to industrial arts education, hobby and craft work. Fee, \$6.00. One hour lecture, 6 hours laboratory. Credit, 3 hours.

135 *Basic Graphic Arts*. Fundamental operations of type composition, stone work, proof reading, press work and distribution. Work in book-binding, paper making, rubber stamp, block cuts, silk screening, duplicating and lay out. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

156 *Upholstery*. Selection of fabrics and materials. Practice in the various craft processes used. Construction of necessary frames and bases. Design of jigs. Use of hand and power tools. Wood finishing. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

161 *General Shop*. General shop approach to major craft areas with emphasis on industrial techniques and applications. Fee, \$6.00. One lecture, 3 hours laboratory. Credit, 2 hours.

- 170 *Automobile Theory and Function.* Consumer approach to acquaint the average owner, operator with the automobile, its limitations, correct operation and maintenance. Credit, 2 hours.
- 222 *Cabinet Making.* Principles of furniture construction, and correct use of hand tools and machines. Prerequisite: IA 121. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.
- 227 *Finishing Materials and Techniques.* Source and nature of finishing materials with practice in their varied usual and special applications. Considers problems of the shop instructor. Prerequisite: IA 222. Fee, \$4.00. One lecture, 3 hours laboratory. Credit, 2 hours.
- 256 *Advanced Upholstery.* Design and construction of large pieces of upholstered projects. Advanced wood finishing. Prerequisite: IA 156. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.
- 323 *Shop Maintenance.* Maintenance operations of machinery and tools in the various industrial arts areas. Fee, \$3.00. One lecture, 6 hours laboratory. Credit, 3 hours.
- 325 *Wood Turning.* Built-up, segmented and jointed projects. Prerequisite: IA 125. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.
- 333 *Advanced Plastics.* Emphasis on materials, machine operations, carving, cementing, embossing, inlaying; for those seeking more advanced work as well as in-service teachers. Prerequisite: IA 133. Fee, \$6.00. One hour lecture, 6 hours laboratory. Credit, 3 hours.
- 342 *Selection and Organization of Subject Matter.* Job analysis, selection of learning units, and organization of content; instruction sheets and evaluative techniques and devices. Credit, 3 hours.
- 356 *Industrial Production of Upholstered Projects.* Design, construction, and assembly of upholstered projects on an industrial basis. Industrial and commercial procedures in the use of sewing machines, cushion stuffers, welting and button making equipment, blind stitching and pattern layouts. Prerequisite: IA 256. Fee, \$6.00. Two lectures, 3 hours laboratory. Credit, 3 hours.
- 361 *General Shop.* General shop organization and practices; metal shaping on spinning lathe, making chucks, polishing, and lathe adaption. Fee, \$4.00. One lecture, 3 hours laboratory. Credit, 2 hours.
- 401g *Drafting Procedures.* Methods of teaching, examinations, grading, drafting problem sequence, drafting room procedures, equipment, visual aids. Laboratory hours provide additional drafting training according to needs. Prerequisites: TD 202, and TD 203, or equivalent. Fee, \$3.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

421g *Production Furniture Construction.* Principles and techniques involved in the construction of furniture through use of both hand and power tools; wood turning, inlaying, carving, finishes, and special processes involved in the design of jigs for production work in school and industry. Prerequisite: IA 121. Fee, \$6.00. One lecture, 6 hours laboratory. Credit, 3 hours.

442g *Shop Planning and Equipment.* Theory and practice in planning industrial arts shops; and in selection, arrangement, and maintenance of equipment. The approaches to new shops and reorganization of existing shop areas. Credit, 3 hours.

444g *Modern Industries.* Study of the several aspects of management, labor, plant and product directed toward understandings necessary for interpretation of industry in the secondary school industrial arts program. Credit, 3 hours.

446g *Instructional Aids.* Audio visual aids peculiar to industrial arts; practical experience in construction and their application to teaching. Credit, 3 hours.

448g *Supervision and Administration of Industrial Arts.* Principles of improving instruction in industrial subjects. Budgets, requisitions, storage of supplies, methods of fund and material control, student personnel problems and practices. Credit, 3 hours.

461g *The General Shop.* Advanced study and operation of the tools, processes, and equipment used in general shop. Construction of secondary schools projects and preparation of teaching devices. Prerequisite: IA 361. Fee, \$6.00. One hour lecture, 6 hours laboratory. Credit, 3 hours.

465g *General Metals.* Metal spinning, casting, heat treating. Includes polishing, finishing and special treatments. Offers opportunity for exploring unusual types of metal work. Prerequisites: TM 161, 169. Fee, \$6.00. One hour lecture, 6 hours, laboratory. Credit, 3 hours.

480g *Methods of Teaching Industrial Arts.* Methods of instruction, organization, and presentation of appropriate content in Industrial Arts. Prerequisite: 2-SE 311 or concurrent registration. Credit, 3 hours.

486g *Aeronautical Instructional Materials.* Design, construction, and operation through models and mockups of visual aid devices for aviation construction for use in pre-flight and mechanics courses in aviation. Prerequisites: IA 103, 121; TM 161, 169. One lecture, 3 hours laboratory. Fee, \$4.00. Credit, 2 hours.

487g *Pre-Flight Aeronautics for Teachers and Laymen.* Gives an insight into the world of aviation and practical applications of navigation meteorology, use and care of instruments, civil air regulations, and operation of aircraft engine power plants. Meets the needs of teachers, and those planning to do technical work. Fee, \$3.00. Credit, 3 hours.

488g *Celestial Navigation for Ground School Instructors and Teachers.* Location of stellar bodies in the celestial sphere. Locating the substellar positions, circles of position, and establishment of fixes from sextant observations. Solving the astronomical triangle. Prerequisites: TA 380, 381; IA 487, or 15 hours aeronautics or equivalent. Fee, \$3.00. Credit, 3 hours.

513 *Electricity and Radio for Teachers.* Programs and courses in electricity and radio for elementary and secondary teachers with emphasis on course syllabi and laboratory projects. Prerequisites: TE 110, 215, or equivalent. Credit, 3 hours.

515 *High School Electrical and Electronic Laboratory Design.* Requirement studies of high school laboratories for electricity and radio. Credit, 3 hours.

540 *Evaluation in Industrial Subjects.* Analysis of factors to be evaluated, such as attitudes, behavioral factors, skills, technical or related information; study of instruments and their construction, together with techniques of their use. Credit, 3 hours.

544 *History of Industrial Arts Education.* Evolution of modern program. Attention is given to economic and social factors motivating this development, together with implications for present and future practices. Credit, 3 hours.

549 *Current Literature and Research.* Analysis of the literature of the industrial field with special attention to individual readings and reports; the implication of such literature on current problems in industrial subjects. Credit, 3 hours.

590 *Reading and Conference.* Credit, 3 hours.

591 *Seminar.* Credit, 3 hours.

592 *Research.* Credit, 3 hours.

593 *Thesis.* Credit, 6 hours.

## Zoology

STAHNKE (Head, Division of Life Sciences and Chairman,  
Department of Zoology), BATTS, BENDER, CLOTHIER,  
DAMMANN, FABIAN, HANSON, JOHNSON, PATTERSON.

### Biology

BI 100 *The Living World.* A survey of the major biological principles as illustrated by the areas of behavior, biogeography, ecology, evolution, hygiene, morphology, physiology, reproduction and development, and taxonomy. Does not meet science requirement in preprofessional curriculum. Fee, \$2.00. Credit, 4 hours.

120 *Field Biology.* Observation, identification, and natural history of plants and animals of aquatic and terrestrial habitats. Prerequisite: BI 100 or equivalent. Fee, \$3.00. One lecture, 2 hours field or laboratory. One week-end field trip. Credit, 2 hours.

196 *Special Techniques in Biology*. Individual projects in the biological sciences. Approval of the instructor and head of the department required. Credit arranged.

340 *Genetics and Eugenics*. Principles and facts of heredity developed from plants and animals. Principles of race improvement. Prerequisites: BI 100 or BO 100, and ZO 100 or equivalent. Credit, 3 hours.

410g *Pro-seminar in the Biological Sciences*. A review of the major principles of biology and the recent advances in various areas as obtained through student reports of the literature and reports by staff members in their specialties. Prerequisites: twenty-five hours in biological sciences and consent of instructor. Credit, 2 hours.

480g *Methods of Teaching Biology*. Methods of instruction, organization, and presentation of appropriate content in biology. Prerequisite: 2-SE 311 or concurrent registration. Credit, 3 hours.

514 *Recent Advances in the Biological Sciences*. A review of the current literature and reports by departmental staff covering recent developments in biological concepts. Prerequisites: at least 24 hours of biological sciences. Credit, 2 hours.

518 *The Development of Biological Concepts*. A biographical and conceptional study of the history of the biological sciences. Prerequisite: twenty-four hours of biological sciences. Credit, 2 hours.

500 *Research Methods*. Credit, 3 hours.

590 *Reading and Conference*. Credit, 3 hours.

591 *Seminar*. Credit, 3 hours.

592 *Research*. Credit, 3 hours.

593 *Thesis*, Credit, 6 hours.

## Entomology

ET 102 *Agricultural Entomology*. The recognition, economic importance, life history, habits and control of harmful and beneficial insects of importance to agriculture, particularly of the Southwest. Properties, formulations, and recommended uses of commercially important insecticides will be considered. Prerequisites: BI 100 or ZO 100, or equivalent. Fee, \$5.00. Two lectures, 1 three-hour laboratory. Credit, 3 hours.

200 *General Entomology*. Form, activities, and classification of insects. Prerequisite: ZO 100 or equivalent. Fee, \$5.00. Three lectures, 4 hours laboratory. Credit, 4 hours.

350 *Insect Morphology*. Morphology of typical insects including both external and internal structure. Prerequisite: ET 200. Fee, \$5.00. Two lectures, 6 hours laboratory. Credit, 4 hours.



404g *Apiculture*. A study of bees and their ways, including methods of management. Students work with bee hives and honey, performing most of the operations essential to good bee-keeping and honey production. Prerequisite: ET 200. Fee, \$5.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

420g *Toxicology of Insecticides*. A study of the mode of action of insecticides, the relationship of chemical structure to toxicity, and the physiological explanation of the chemical poisoning of insects. Prerequisite: ET 200 or equivalent and Organic Chemistry. Credit, 2 hours.

460g *Insect Physiology*. A survey of the life processes of insects. Prerequisite: ET 200 (chemistry desirable but not required). Fee, \$5.00. Two lectures, 4 hours laboratory. Credit, 3 hours.

470g *Insect Taxonomy*. Classification, nomenclature and taxonomic practices in entomology. Emphasis is placed on the identification of adult insects. Immature forms are considered briefly. Prerequisite: ET 200. Fee, \$5.00. Two lectures, 6 hours laboratory. Credit, 4 hours.

496g *Entomological Techniques*. A practical consideration of important techniques not adequately treated in other courses, particularly: scientific illustration, use of the literature, mounting, preserving, and preparing insects for study, record keeping, elementary mathematical treatment of data, interpretation of graphs, charts and maps. Prerequisite: ET 200. Fee, \$2.00. One lecture, 3 hours laboratory. Credit, 2 hours.

## Microbiology

MI 201 *Microbiology*. Bacteria, molds, and other micro-organisms, and their application in industrial, agricultural, hygienic and domestic problems. Prerequisites: CH 111; BI 100 or equivalent. Credit, 3 hours.

202 *Microbiology Laboratory*. The principles and laboratory techniques used in identifying and handling of micro-organisms. Prerequisite or taken concurrently: MI 201. Fee, \$5.00. Three hours laboratory. Credit, 1 hour.

410g *Advanced Microbiology*. A comparative study of the systematic and pathogenic relationships of micro-organisms with a consideration of the physiological activities of the micro-organisms involved. Prerequisites: MI 202 and CH 231 and consent of instructor. Fee, \$6.00. Three lectures, 6 hours laboratory. Credit, 5 hours.

445g *General Parasitology*. Pathogenic protozoa, worms, and arthropod parasites. Prerequisite: ZO 100 or equivalent. Fee, \$5.00. Three lectures, 4 hours laboratory. Credit, 4 hours.

## Zoology

ZO 100 *General Zoology*. The fundamental principles of zoology as applied to the study of the main groups of invertebrate and vertebrate animals. Prerequisite: high school biology, or BI 100. Fee \$5.00. Three lectures, 3 hours laboratory. Credit, 4 hours.

102 *Human Anatomy-Physiology*. Consideration of the structure and dynamics of the human mechanism. Prerequisites: high school biology and chemistry; or PL 110 and BI 100 or equivalent. Not open to biology or medical technology majors, pre-medical, or pre-dental students. Fee, \$2.00. Credit, 4 hours. With laboratory, Credit, 5 or 6 hours.

150 *Invertebrate Zoology*. The characteristics, life cycles, habits, economic importance, and evolution of the major groups of invertebrate animals. Prerequisite: ZO 100 or consent of instructor. Two lectures, 3 hours laboratory. One week-end field trip. Fee, \$4.00. Credit, 3 hours.

174 *Ornithology*. A study of birds; particularly habits, behavior, and economic importance of Arizona species. Recognition of species by size, form, color, song, and habit. Prerequisite: BI 100 or equivalent. Fee, \$3.00. One lecture, 2 hours laboratory. Credit, 2 hours.

175 *Mammalogy*. A study of the classification, structure, habits, ecology, and distribution of mammals, with emphasis on North American forms. Prerequisite: BI 100 or ZO 100. Fee, \$4.00. One lecture, 2 hours laboratory. One week-end field trip. Credit, 2 hours.

176 *Reptiles and Amphibians*. An overview of the snakes, lizards, crocodilians, turtles, frogs, toads, salamanders, and dinosaurs. Special emphasis on natural history and identification. Prerequisites: BI 100 or ZO 100, and consent of instructor. Fee, \$3.00. One lecture, 2 hours laboratory, one week-end field trip. Credit, 2 hours.

271 *Chordate Anatomy*. Fundamental principles of the structure, development, and homology of the chordates. Prerequisite: ZO 100. Fee, \$6.00. Two lectures, 6 hours laboratory. Credit, 4 hours.

360 *General Physiology*. The functions and structures of the animal body with emphasis on fundamental physiological processes and mechanisms. Prerequisites: ZO 100, CH 111 or equivalent. Fee, \$5.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

396 *Animal Microtechnique*. Zoological microtechnique, including the preparation for microscopic examination of animal structures, tissues, cells and whole mounts. Prerequisite: ZO 100. Fee, \$4.00. One lecture, 3 hours laboratory. Credit, 2 hours.

425g *Animal Ecology*. Wild animals of North America—their adaptations, communities, habitat, conservation, etc. Prerequisites:

BO 100, ZO 100. Fee, \$4.00. Three lectures, 4 hours laboratory or field trips. Credit, 4 hours.

440g *Animal Cytology*. Structure, differentiation, and functions of cells. Prerequisite: ZO 100. Fee, \$4.00. Two lectures, 4 hours laboratory. Credit, 3 hours.

441g *Poisonous Animals of Arizona*. Form, activities, and identification of venomous animals of Arizona and others thought venomous. Prerequisite: ZO 100 or equivalent. Fee, \$4.00. Two lectures, 3 hours laboratory. Credit, 3 hours.

460g *Human Mechanisms*. Stressing the functions of the human body: muscle activity; metabolic processes and systems involved, coordination mechanisms; the life cycle. Prerequisites: CH 111; ZO 100 or equivalent. Fee, \$5.00. Three lectures, 3 hours laboratory. Credit, 4 hours.

470g *Animal Histology*. Microscopic anatomy of animal tissues and identification of tissues. Prerequisite: ZO 100. Fee, \$4.00. One lecture, 3 hours laboratory. Credit, 2 hours.

472g *Embryology*. Animal development from egg to the period of extra-uterine or extra-ovular existence, including invertebrates but with the most emphasis on vertebrates. Prerequisite: ZO 100 and ZO 271 or consent of instructor. Fee, \$6.00. Three lectures, 4 hours laboratory. Credit, 4 hours.

560 *Experimental Mammalian Physiology*. Directed experiments to develop skill in the use of physiological equipment and in the handling of animals followed by an independent study project. Prerequisite: permission of instructor. Fee, \$6.00. Six hours of laboratory. Credit, 2 hours.



# Statistics

## Summary of Registration 1954-55

### Arizona State College at Tempe

#### COLLEGE

#### *Resident Students — Regular Session*

	Freshmen	Sophomores	Juniors	Seniors	Graduates	Unclass.	Total
Men .....	1207	588	517	443	561	37	3353
Women ..	583	317	324	237	414	30	1905
Total	1790	905	841	680	975	67	5258

#### *Extension Division*

#### *Residence Center Students—Regular Session*

Men .....	523
Women .....	784
Total .....	1307

#### *Correspondence*

Men .....	46
Women .....	110
Total .....	156

#### *Summer Session 1954*

Men .....	1401
Women .....	1207
Total .....	2608

#### *Total Registration in College*

Men .....	5323
Women .....	4006
Total .....	9329

#### *Counted More Than Once*

Men .....	833
Women .....	651
Total .....	1484

#### *Net Enrollment*

Men .....	4490
Women .....	3355
Total .....	7845

#### *Training Schools*

Boys .....	149
Girls .....	160
Total .....	309

GRAND TOTAL ..... 8154

# Summary of Registration 1955-56

## COLLEGE

### *Resident Students — Regular Season*

	Freshmen	Sophomores	Juniors	Seniors	Graduates	Total
Men .....	1663	669	614	553	590	4089
Women .....	783	362	343	302	515	2305
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total	2446	1031	957	855	1105	6394

### *Extension Division*

#### *Residence Center Students — Regular Session*

Men .....	548
Women .....	748
Total .....	<hr/> 1296

#### *Correspondence*

Men .....	63
Women .....	119
Total .....	<hr/> 182

#### *Summer Session 1955*

Men .....	1680
Women .....	1419
Total .....	<hr/> 3099

#### *Total Registration in College*

Men .....	6380
Women .....	4591
Total .....	<hr/> 10971

#### *Counted More Than Once*

Men .....	1069
Women .....	820
Total .....	<hr/> 1889

#### *Net Enrollment*

Men .....	5311
Women .....	3711
Total .....	<hr/> 9082

#### *Training Schools*

Boys .....	149
Girls .....	137
Total .....	<hr/> 286

GRAND TOTAL.....

---

9368

## Summary of Graduates 1954-55

Total Graduates Through May 25, 1954.....	11571
One, Two, and Three Year Diplomas:	
(Discontinued Commencement 1936).....	3522
Earned Degrees:	
Bachelors	
Bachelor of Arts.....	282
Bachelor of Science.....	1815
Bachelor of Arts in Education.....	5027
Total .....	7124
Masters	
Master of Arts in Education.....	919
Total .....	919
Doctors	
Doctor of Education.....	1
Total .....	1
Total Through May, 1954.....	8044
Honorary Degrees:	
Master of Arts in Education.....	2
Doctor of Laws.....	3
Total .....	5
Total Degrees Granted Through May 25, 1954.....	8049
Earned Degrees Granted May 24, 1955	
Bachelors	
Bachelor of Arts.....	56
Bachelor of Science.....	300
Bachelor of Arts in Education.....	273
Total .....	629
Masters	
Master of Arts in Education.....	286
Total .....	286
Doctors	
Doctor of Education.....	0
Total .....	0
Total May, 1955.....	915
Honorary Degrees:	
Doctor of Literature.....	1
Doctor of Science.....	1
Total .....	2
Total Degrees Granted May 24, 1955.....	917
Total Graduates Through May 25, 1954.....	11571
One, Two, and Three Year Diplomas:	
(Discontinued Commencement 1936).....	3522
Earned Degrees:	
Bachelors	
Bachelor of Arts.....	338
Bachelor of Science.....	2115
Bachelor of Arts in Education.....	5300
Total .....	7753

Masters		
Master of Arts in Education.....	1205	
Total .....	1205	
Doctors		
Doctor of Education.....	1	
Total .....	1	
Total Through May, 1955.....		8959
Honorary Degrees:		
Master of Arts in Education.....	2	
Doctor of Laws.....	3	
Doctor of Literature.....	1	
Doctor of Sciences.....	1	
Total .....	7	
Total Degrees Granted Through May 24, 1955.....		8966
Total Graduates Through May 24, 1955.....		12488

## Summary of Graduates 1955-56

Total Graduates Through May 24, 1955.....		12488
One, Two, and Three Year Diplomas: (Discontinued Commencement 1936).....		3522
Earned Degrees:		
Bachelors		
Bachelor of Arts.....	338	
Bachelor of Science.....	2115	
Bachelor of Arts in Education.....	5300	
Total .....	7753	
Masters		
Master of Arts in Education.....	1205	
Total .....	1205	
Doctors		
Doctor of Education.....	1	
Total .....	1	
Total Through May, 1955.....		8959
Honorary Degrees:		
Master of Arts in Education.....	2	
Doctor of Laws.....	3	
Doctor of Literature.....	1	
Doctor of Science.....	1	
Total .....	7	
Total Degrees Granted Through May 24, 1955.....		8966
Earned Degrees Granted May 29, 1956		
Bachelors		
Bachelor of Arts.....	63	
Bachelor of Science.....	348	
Bachelor of Arts in Education.....	360	
Total .....	771	
Masters		
Master of Arts in Education.....	266	
Total .....	266	



Doctors	
Doctor of Education.....	3
Total .....	3
Total May, 1956.....	1040
Honorary Degrees:	
Doctor of Laws.....	2
Total .....	2
Total Degrees Granted May 29, 1956.....	1042
Total Graduates Through May 24, 1955.....	12488
One, Two and Three Year Diplomas:	
(Discontinued Commencement 1936).....	3522
Earned Degrees:	
Bachelors	
Bachelor of Arts.....	401
Bachelor of Science.....	2463
Bachelor of Arts in Education.....	5660
Total .....	8524
Masters	
Master of Arts in Education.....	1471
Total .....	1471
Doctors	
Doctor of Education.....	4
Total .....	4
Total Through May, 1956.....	9999
Honorary Degrees:	
Master of Arts in Education.....	2
Doctor of Laws.....	5
Doctor of Literature.....	1
Doctor of Science.....	1
Total .....	9
Total Degrees Granted Through May 29, 1956.....	10008
Total Graduates Through May 29, 1956.....	13530

# Gifts and Bequests

For many centuries men and women of ability and energy have paused after reaching the peaks of business and professional success and asked two questions:

"How can I best use my material resources to make the world a better place in which to live?"

"And how can I perpetuate my ideals to generations yet unborn?"

One value that lasts is the higher education of our youth, America's greatest resource! This College, now on the threshold of its greatest growth, faces a doubling of enrollment by 1965. Hundreds of talented students are now denied the chance to go to college due to lack of funds. This is the most shocking waste of manpower faced by this scientific and technological age. We cannot afford it.

Scholarship funds for worthy young people who will be tomorrow's leaders is the most pressing need of this College today.

You can make your influence felt with present and future generations of young people by making *gifts* or *bequests* to the College. You may name the fund for yourself, your wife, son or daughter. Your investment in growing personality is a long-time investment, and it pays big dividends.

In addition to scholarships of every kind, the needs are many and urgent. They include: the student loan fund, graduate fellowships, research, low-cost housing and buildings, salary supplements to attract noted professors, and special projects of many kinds.

Gifts of books for the Matthews Library, acquisitions to our growing collection of American Art, special laboratory equipment, all will be most welcome.

Calvin Coolidge said, "To place your name, by gift or bequest, in the keeping of an active university is to be sure that the name and project with which it is associated will continue down the centuries to quicken the minds and hearts of youth and make a permanent contribution to the welfare of humanity."

It is suggested that those desiring to make such a gift or bequest to the College consult their attorney. A form for use in making such gift or bequest should approximate that shown below.

I, .....  
(Name)  
of .....  
(Address)  
do hereby give, devise, and bequeath to the Board of Regents of the University and State Colleges of Arizona, for use by the Arizona State College at Tempe, Arizona, the sum of.....  
.....dollars. This is to be known as the  
.....Fund, and is  
to be used as indicated below:.....  
.....  
.....  
.....

# Index

Absence from classes, Regulations concerning .....	73
Absentia, Degree in and fee for .....	76, 89
Accounting courses .....	236
Accreditation of the College .....	34
Activities, Special Group .....	101
Administration, Assistants in .....	28
Administration Building .....	36
Administration, Staff .....	10
Admission, adults .....	46
Admission, advanced standing .....	47
Admission, conditional .....	45
Admission, high school credits, required .....	45
Admission, non-graduates of high schools .....	46
Admission, requirements .....	44
Admission to graduate work .....	205, 207, 208
Admission to Summer Session .....	48, 211
Admission, Veterans .....	46
Adult Education courses .....	257
Advanced standing, Admission with .....	47
Advertising courses .....	238
Advisers, Curriculum .....	49, 91
Aeronautics courses .....	333
Affiliated Faculty .....	24
Agricultural Economics courses .....	216
Agricultural Mechanics courses .....	217
Agriculture courses .....	216
Agriculture Curriculum .....	181
Agriculture Education, Special Program .....	182
Agronomy courses .....	218
Air Science courses .....	223
Air Science and Military Science, requirements .....	80, 82, 87
Alumni Association .....	95
Animal Husbandry courses .....	219
Anthropology courses .....	329
Application for graduation, when to be made .....	88
Application for Teaching Certificates .....	88
Applied Arts and Sciences, College of .....	178
Architecture and Construction, Special Programs .....	188
Architecture courses .....	224
Architecture Curriculum .....	184
Area Studies, Latin-American .....	136
Art, Collection of American .....	38
Art courses .....	229, 230
Art Education courses .....	230
Art History courses .....	229
Associated Students .....	97
Athletics, Intercollegiate .....	102
Attendance .....	73
Audio Visual Aids, Bureau of .....	37
Audio-Visual Education courses .....	260
Audio Visual Library .....	37

Auditing courses .....	50
Auditor's Fee .....	76
Awards to students .....	65
Bachelor of Arts Degree, Curriculum .....	106
Bachelor of Arts in Education Degree, Curriculums .....	146
Bachelor's Degree, Requirements for second .....	87
Bachelor of Science Degree, Curriculum .....	121
Bachelor of Science Degree Curriculum, Agriculture .....	181
Bachelor of Science Degree Curriculum, Business Adminis. ....	163
Bachelor of Science Degree Curriculum, Architecture .....	185
Bachelor of Science Degree Curriculum, Construction .....	187
Bachelor of Science Degree Curriculum, Technology.....	198
Bachelors' Degrees, Requirements for .....	87
Band .....	101
Bachelor of Science Degree Curriculum in Engineering .....	190
Bachelor of Science Degree Curriculum in Nursing .....	140
Basic Courses in Education.....	266
Bequests and gifts .....	352
Biology courses .....	341
Board and room, Fees for .....	77
Board of Regents .....	9
Botany courses .....	234
Buildings, College .....	36
Business Administration courses .....	236
Business Administration, College of .....	162, 236
Business Education courses .....	239
Calendar, College, 1957-58, 1958-59 .....	6
Campus Map .....	361
Cap and Gown, Fee .....	76
Certification for teaching, Arizona .....	88, 143
Chapel, Danforth .....	43
Chemical Engineering courses .....	267
Chemistry courses .....	249
Civil Engineering courses .....	267
Classification of Courses .....	214
Classification of students by years and by credits .....	48
Classroom Buildings .....	38
Clearance required, Financial .....	89
College of Applied Arts and Sciences .....	178
College of Business Administration .....	162
College of Education .....	142
College of Liberal Arts .....	104
College Setting .....	34
College Staff .....	10
Commencement Exercises, Attendance at .....	89
Comprehensive Examinations .....	50
Computer Engineering courses .....	269
Conduct of students .....	72
Construction courses .....	227
Correspondence courses .....	212
Correspondence courses, Amount of credit accepted for .....	212
Counseling Program .....	90
Course loads .....	49
Course Numbers, System .....	214

Courses of Instruction .....	214
Course requirements .....	87
Course restrictions .....	49
Courses, Classification of .....	214
Courses, Dropping .....	52
Course of Instruction .....	214
Credit requirements .....	87
Credit, Transfer .....	47
Credit, Unit of .....	87
Curriculum Advisers .....	49, 91
Curriculum, Bachelor of Arts Degree .....	106
Curriculum, Bachelor of Science Degree .....	121
Curriculum, Bachelor of Science Degree in Agriculture .....	181
Curriculum, Bachelor of Science Degree in Business Administration .....	163
Curriculum, Bachelor of Science Degree in Architecture .....	185
Curriculum, Bachelor of Science Degree in Construction .....	187
Curriculum, Bachelor of Science Degree in Engineering .....	190
Curriculum, Bachelor of Science in Nursing .....	140
Curriculum, Bachelor of Science Degree in Technology .....	198
Curriculum, Choosing a .....	73
Curriculum Laboratory .....	37
Curriculum, Nursing .....	140
Curriculum and course requirements .....	87
Curriculums, Bachelor of Arts in Education Degree .....	146
Curriculums, Technical .....	200
Dairy Husbandry courses .....	220
Degrees conferred .....	87
Dental, Pre-, Curriculum .....	134
Deposits required .....	77
Dining Hall .....	42
Directed Teaching .....	144
Directory, College Staff .....	10
Disqualification for deficiency in scholarship .....	79
Divisions of the College .....	8
Divisions, Liberal Arts .....	104
Divisions, Applied Arts and Sciences .....	178
Doctor of Education Degree .....	143, 204, 208
Dramatics and Speech Activities .....	102
Drama courses .....	331
Dropping Courses .....	52
Dropping Courses, Instructor's Request .....	79
Economics courses, Business Administration .....	240
Education, College of .....	142, 253
Education courses .....	253
Education Specialist Degree .....	143, 204, 207
Educational Psychology courses .....	263
Electrical Engineering courses .....	267
Electronics courses .....	335
Elementary Education courses .....	254
Elementary Curriculum .....	149
Employment of students .....	95
Engineering and Technology Center .....	38

Engineering courses .....	267
Engineering, Curriculum .....	190
Engineering Science courses .....	272
English courses .....	276
Entomology courses .....	342
Environment, College .....	34
Examinations, Comprehensive .....	50
Expenses .....	74
Expenses, Summary of student .....	77
Experience in teaching, No college credit for .....	48
Experience in teaching, Recognition of .....	48
Extension division .....	212
Faculty .....	11
Farm, College .....	36
Fees, Deposits, and Expenses .....	74
Fees, Regular .....	74
Fees, Special .....	74
Fees, late .....	76
Fees, Payment and Refund of .....	77
Fellowships and Scholarships .....	54
Field of Specialization Requirements, Agriculture .....	181
Field of Specialization Requirements, Technology .....	199
Field of Specialization Requirements, Business .....	165
Final residence required .....	88
Finance Courses .....	241
Financial Assistance and Awards .....	65
Financial Clearance .....	89
Foreign Languages Courses .....	280
Foreign Service Training Program .....	138
Forensics .....	102
Forestry, Pre-, Curriculum .....	182
Fraternalities and Sororities .....	101
French courses .....	280
Freshman registration .....	50
General Business Administration courses .....	242
General Education .....	84
General Education, College of Applied Arts and Sciences .....	178
General Education, College of Business Administration .....	163
General Education, College of Education .....	146
General Education, College of Liberal Arts .....	106, 121
General expenses .....	77
Geography courses .....	284
Geology courses .....	286
German courses .....	281
Gifts and bequests .....	352
Grade, Change of .....	79
Grade Points .....	79
Grades .....	78
Graduate courses, special .....	215
Graduate Division .....	204
Graduates 1954-55; 1955-56 .....	349, 350
Graduation, Application for .....	88
Graduation fees .....	89

Graduation, Requirements for .....	87
Graduation, With Honors .....	88
Grounds, College .....	35
Guidance and Counseling courses .....	264
Guidance Program, College .....	90
Hall Residents, Personal Equipment .....	93
Halls, Residence .....	40, 91
Health Education courses .....	288
Health Examination .....	44, 94
Health, Physical Education, and Recreation courses .....	288
Health Service, Student .....	94
High school graduates, Admission of .....	45
Higher Education courses .....	257
History courses .....	294
History and Political Science courses .....	294
History of the College .....	31
Home Economics courses .....	299
Home Management House .....	39
Honorary Groups .....	98
Honors and Awards .....	65
Horticulture courses .....	221
Housing .....	91
Humanities courses .....	302
Illness, Report of .....	94
Incomplete grade marks, Removal of .....	78
Independent Study .....	215
Index of scholarship .....	79
Industrial Arts courses .....	338
Industrial Arts Education .....	197
Industrial Engineering courses .....	273
Instruction, Staff .....	11
Insurance courses .....	244
Intercollegiate Athletics .....	102
Intramurals .....	101
Journalism courses .....	305
Junior colleges, Admission of students from .....	48
Kindergarten-Primary Curriculum .....	147
Kindergarten-Primary Education courses .....	253
Latin-American Area Studies .....	136
Latin courses .....	282
Law, Pre-, Curriculum .....	133, 175
Liberal Arts, College of .....	104
Library, Audio-Visual .....	37
Library, Matthews .....	36
Library Science courses .....	303
Library, Payne Training School .....	36
Living arrangements for students .....	92
Load, Student .....	49
Loan Funds .....	64
Location of the College .....	34

Maintenance, Assistants in .....	30
Major Requirements .....	107, 122
Major Requirements, Divisional .....	110, 124
Major Teaching Fields .....	152, 153
Management courses .....	244
Marketing courses .....	246
Marking system .....	78
Mass Communications courses .....	305
Master of Arts Degree .....	106, 204
Master of Science Degree .....	106, 163, 204
Master of Arts in Education Degree .....	143, 204, 205
Mathematics courses .....	307
Matthews Library .....	36
Matthews Library, Staff .....	27
Meal tickets and meals for guests .....	77
Mechanical Engineering courses .....	274
Mechanics courses .....	337
Medical, Pre-, Curriculum .....	134
Medical services .....	94
Medical Technology courses .....	252
Medical Technology Curriculum .....	139
Memorial Union .....	42
Men Students, Associated .....	80
Microbiology courses .....	235, 343
Military Science and Air Science Requirements .....	63, 65, 87
Military Science courses .....	311
Ministerial, Pre-, Curriculum .....	132
Minor Teaching Fields .....	153
Musical Activities .....	101
Music courses .....	312, 315
Music Performance courses .....	312
Non-resident tuition fee .....	74
North Central Association, Membership in .....	34
Nuclear Engineering courses .....	276
Numbering System, courses .....	214
Nursery School .....	39
Nursing, School of .....	105, 140
Off-Campus Housing .....	93
Office Administration courses .....	247
Optometry, Pre-, Curriculum .....	131
Orchestra .....	101
Orientation .....	90
Osteopathy, Pre-, Curriculum .....	134
Pharmacy, Pre-, Curriculum .....	132
Philosophy courses .....	328
Photography Section .....	37
Physical Education and Recreation Activities .....	101
Physical Education courses .....	289
Physical Education, Requirement .....	88
Physical examination .....	44
Physical Science courses .....	322
Physics and Astronomy courses .....	319

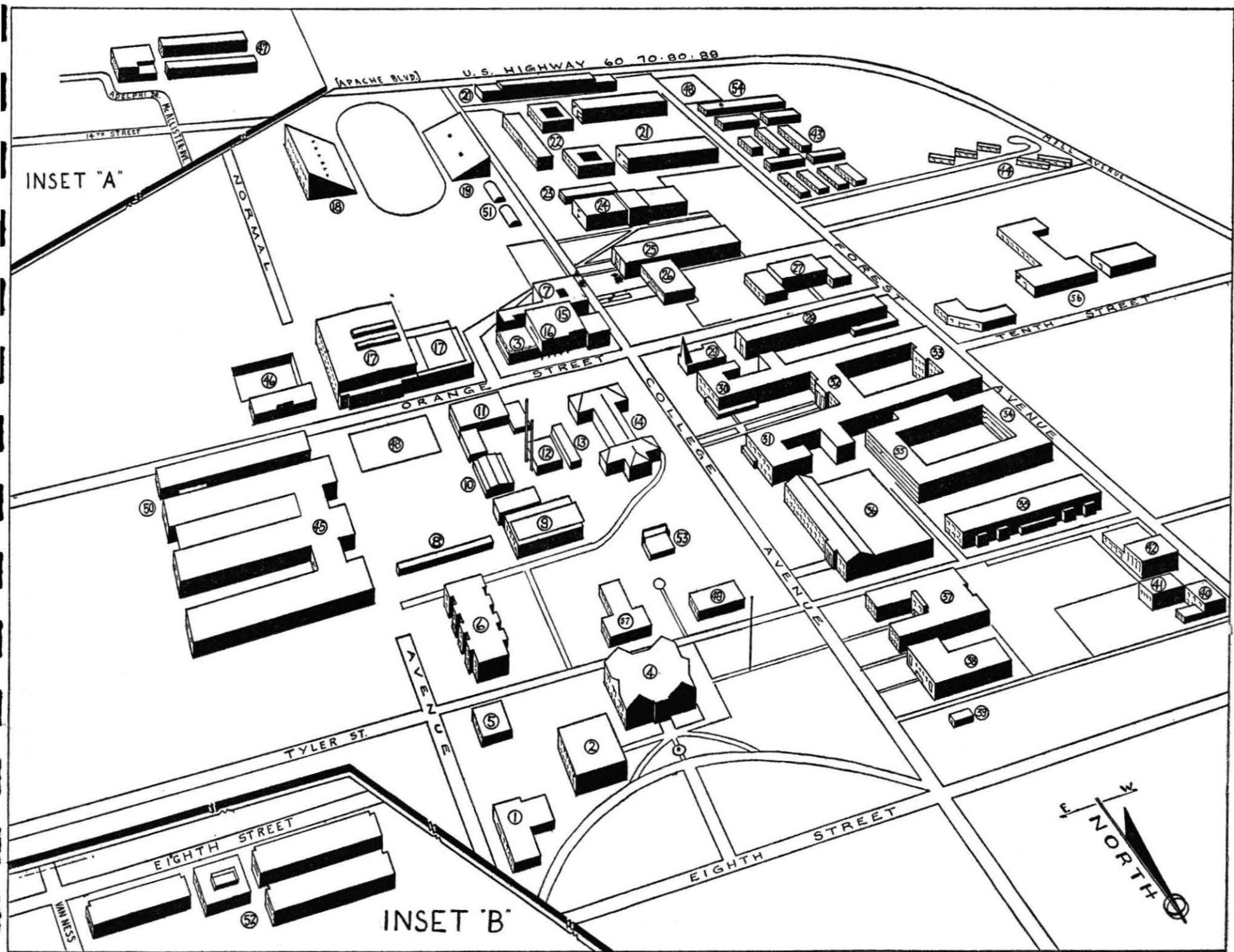


Physics courses .....	319
Placement Center .....	95
Political Science courses .....	297
Poultry Husbandry courses .....	222
Prerequisites .....	216
Probation, Scholarship .....	79
Psychological and Reading Clinics .....	91
Psychology and Philosophy courses .....	323
Psychology courses .....	323
Public Service Training Program .....	137
Publications, Student .....	103
Purposes of the College .....	33
Radio-Television Bureau .....	37, 102
Radio-Television courses .....	306
Real Estate courses .....	248
Recreation courses .....	293
Refund of fees .....	77
Registration .....	48
Registration, Changes in .....	52
Registration fee .....	74
Registration, Late .....	52
Registration 1954-55, 1955-56 .....	347, 348
Regulations, College .....	72
Reinstatement .....	79
Religious groups .....	100
Remedial English .....	87, 276
Reports, Scholarship .....	80
Requirements, Meeting New .....	87
Research and Surveys courses .....	265
Reservations of dormitory room, Deposit required for .....	92
Residence center classes .....	177
Residence Halls .....	40, 91
Residence Regulations .....	92
Residence requirements for graduation .....	88
Room and Board, Fees for .....	77
Room Reservation .....	77
R. O. T. C. Requirement .....	80, 82, 87
Russian courses .....	282
Sahuaro, Student Year Book .....	103
Scholarship, Disqualification .....	79
Scholarship Index .....	79
Scholarship Probation .....	79
Scholarship Reports .....	80
Scholarship Requirements .....	88
Scholarships and Fellowships .....	54
School Administration and Supervision courses .....	258
Secondary Education courses .....	256
Secondary Curriculum .....	151
Secretarial, Special Program .....	176
Semester hour unit defined .....	87
Social Foundations courses .....	260
Social Sciences courses .....	331
Social Welfare courses .....	331

Social Work, Pre Curriculum .....	135
Sociology and Anthropology courses .....	329
Sociology courses .....	330
Sororities and Fraternities .....	100
Spanish courses .....	283
Special Education courses .....	261
Special Secretarial Program .....	176
Special Students .....	49
Speech and Dramatics Activities .....	102
Speech courses .....	332
Speech and Drama courses .....	331
Staff, Administration .....	10
Starred Courses .....	216
State Press, student newspaper .....	103
Statistics .....	347
Student Activities Program .....	97
Student Affairs .....	97
Student Government .....	97
Student Health Service .....	43
Student Memorial Union .....	97
Student Organizations .....	98
Student Placement .....	95
Student Publications .....	103
Student Services .....	42
Summary of Registration, 1954-55, 1955-56 .....	347, 348
Summer Session .....	48, 211
Swimming Pool .....	40
Teacher Placement .....	95
Teaching, Directed .....	144
Teaching experience, Recognition of .....	48, 145
Technical Curriculums, two-year special .....	200
Technical Design courses .....	334
Technology courses .....	333
Television Programs .....	38, 103
Testing Program .....	90
Tests, Aptitude .....	44
Training School, Staff .....	27
Training Schools .....	39, 145
Transcripts .....	44, 76
Transfer Credit .....	47
Tuition for non-resident students .....	74
Unit of credit defined .....	87
Vaccination .....	44
Veterans, Special Information .....	46
Veterinary, Pre-, Curriculum .....	182
Visual Aids, Bureau of .....	37
Withdrawal from College .....	53
Withdrawal of Courses .....	216
X-Ray Examination .....	44
Zoology courses .....	341, 344

1—Student Health Center  
2—English Building  
3—Cafeteria  
4—Old Main  
5—President's Home  
6—Alpha Hall  
7—Bookstore  
8—Storage—Maintenance  
9—Classroom Unit A  
10—Band Building  
11—Maintenance and Warehouse  
12—Heating Plant  
13—Maintenance Office  
14—East Hall  
15—Devil's Den  
16—Memorial Union  
17—Mens' P. E. Building  
18—Haigler Hall—East Stadium  
19—West Stadium  
20—Hayden Hall  
21—Best Hall  
22—Irish Hall  
23—Science Annex  
24—Science Building  
25—Agriculture and Business Administration  
26—Administration Building  
27—Moeur Activity Building  
28—Wilson Hall  
29—Danforth Chapel  
30—South Hall  
31—North Hall  
32—West Hall  
33—Gammage Hall  
34—McClintock Hall "A"  
35—Matthews Hall  
36—Matthews Library  
37—Arts Building  
38—Home Economics Building  
39—Campus Cottage  
40—Home Management  
41—Nursery School  
42—Psychology Offices and Clinic  
43—Victory Village Apartments  
44—Faculty Apartments  
45—Engineering and Technology Center  
46—Swimming Pool  
47—Sahuro Hall  
48—Tennis Courts  
49—Payne Auditorium  
50—KASC and TV Studios  
51—Physical Science Annex  
52—Palo Verde Hall  
53—Outdoor Bandshell  
54—Ramada Hall  
55—McClintock Hall "B"  
56—Payne Training School  
57—Kindergarten-Primary Annex

Administration Building—26  
Agriculture and Business Administration—25  
Alpha Hall—6  
Arts Building—37  
Band Building—10  
Best Hall—21  
Bookstore—7  
Cafeteria—3  
Campus Cottage—39  
Classroom Unit A—9  
Danforth Chapel—29  
Devil's Den—15  
East Hall—14  
Engineering and Technology Center—45  
English Building—2  
Faculty Apartments—44  
Gammage Hall—33  
Haigler Hall—East Stadium—18  
Hayden Hall—20  
Heating Plant—12  
Home Economics Building—38  
Home Management—40  
Irish Hall—22  
KASC and TV Studios—50  
Kindergarten-Primary Annex—57  
Maintenance Office—13  
Maintenance and Warehouse—11  
Matthews Hall—35  
Matthews Library—36  
McClintock Hall "A"—34  
McClintock Hall "B"—55  
Memorial Union—16  
Mens' P. E. Building—17  
Moeur Activity Building—27  
North Hall—31  
Nursery School—41  
Old Main—4  
Outdoor Bandshell—53  
Palo Verde Hall (Inset B)—52  
Payne Auditorium—49  
Payne Training School—56  
Physical Science Annex—51  
President's Home—5  
Psychology Offices and Clinic—42  
Ramada Hall—54  
Sahuro Hall (Inset A)—47  
Science Annex—23  
Science Building—24  
South Hall—30  
Storage - Maintenance—8  
Student Health Center—1  
Swimming Pool—46  
Tennis Courts—48  
Victory Village Apartments—43  
West Hall—32  
West Stadium—19  
Wilson Hall—28



INSET "A"

INSET "B"





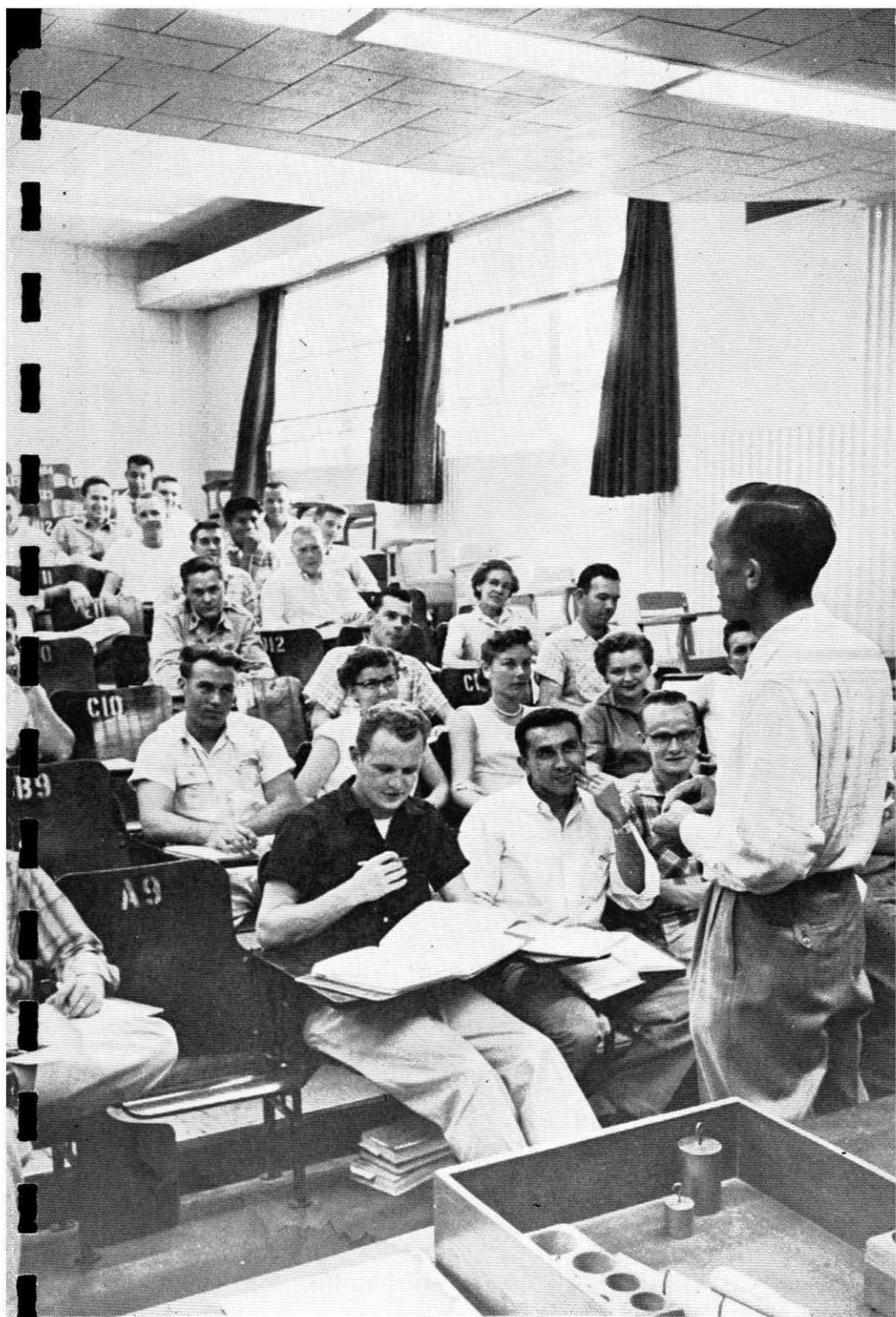
These students find ideal study conditions in one of the several reference rooms in Matthews Library. Reference rooms afford a wealth of bound periodicals and many publications which are in constant demand.



Lunchtime in the Cafeteria in the Memorial Union. Note the modern decor of the coved ceiling with recessed lighting and air-conditioning fixtures. Wholesome meals at modest prices are prepared by a qualified staff in the large, modern kitchen.

West Hall faces the Quad. It is one of the older women's residence halls and, as do each of the residence halls, has its traditions which are kept alive by each new class.

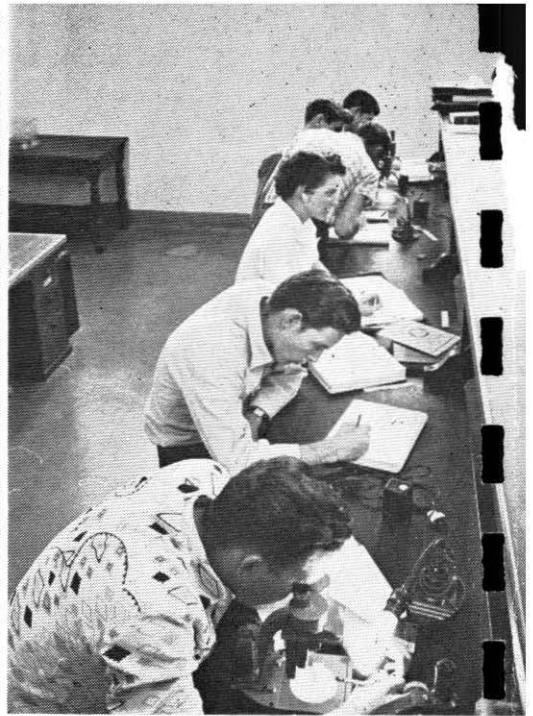




One of the lecture theaters in the Science building. These theaters were designed to provide good viewing and perfect acoustics essential in the presentation of scientific material.



**A partial view of the Bookstore. A completely stocked store supplying the needs of every student.**

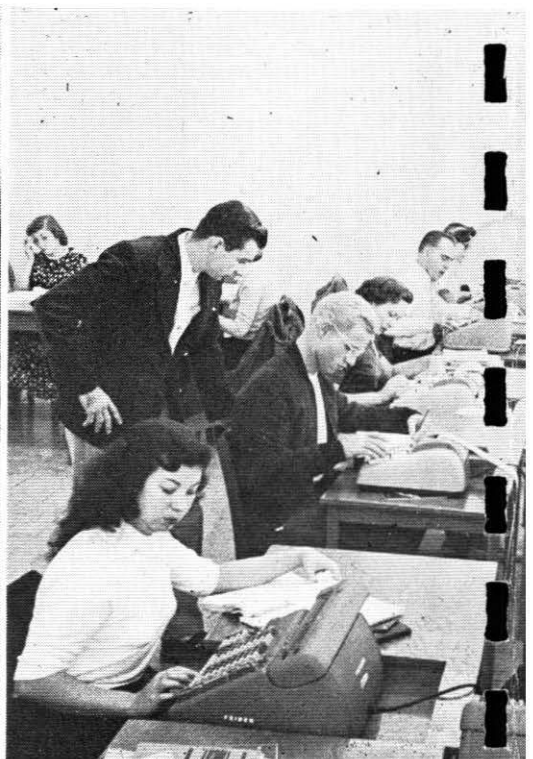


**Bugs and Biology go together! The microscope is the key.**

**Future engineers measuring and drawing.**



**Students meet calculators! . . . and the machine is always right!**



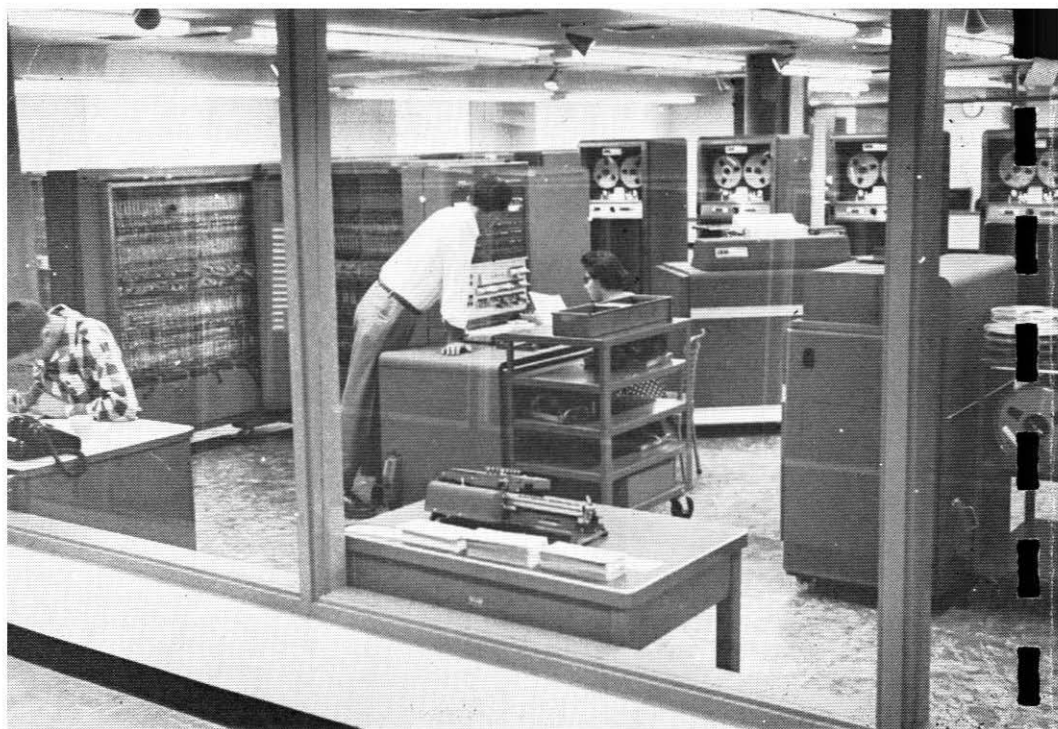




Near mid-campus Wilson Hall, opened in 1956, accommodates 140 women with the finest of study and sleeping facilities. A roof-top sun bathing deck is also provided.

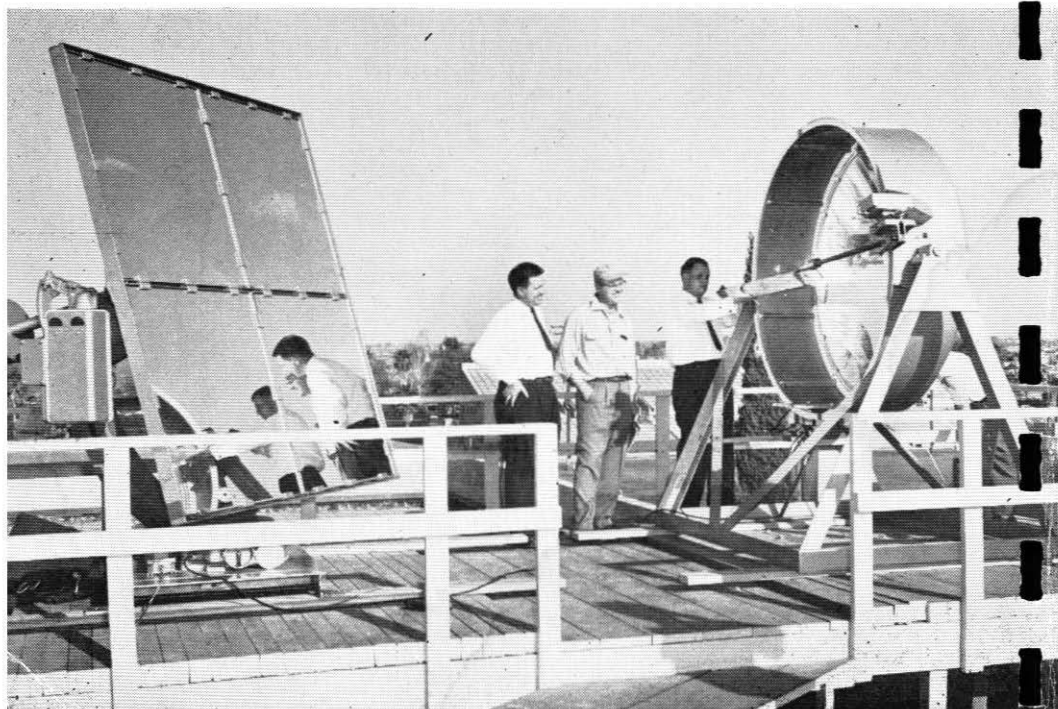
A room in Wilson Hall . . . and the inevitable "Pajama Party!" Girls are permitted to decorate and arrange the rooms in the expression of their taste.





The electronic computer, one of the largest made, is in the wing of the E and T Center. The computer is an integral facility in courses in computer electronics and was provided by the General Electric Company. Research and production problems are also processed in this "giant brain."

A close-up of the solar furnace atop the Science building. Temperatures hot enough to melt building bricks are obtained from the collected sunlight.





Forming the letters A S C, the spectacular Arizona State band salutes the home stands at a night football game.

Grace, skill, and beauty are reflected in this code as she participates in the athletic program for women at Arizona State.





In the Memorial Ballroom, fun reigns supreme at a typical campus dance. Swing your partner and do-si-do!

Formals and ties as college men and women convene in this Christmas banquet scene.

