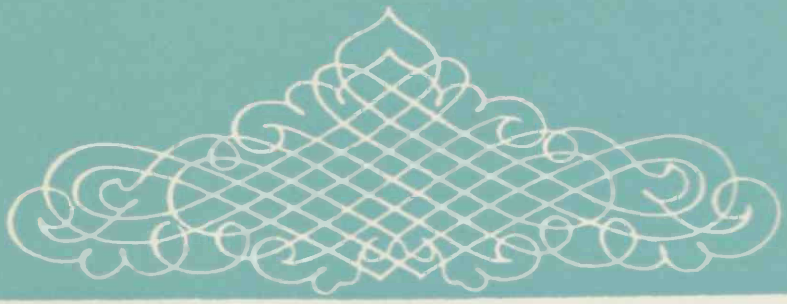
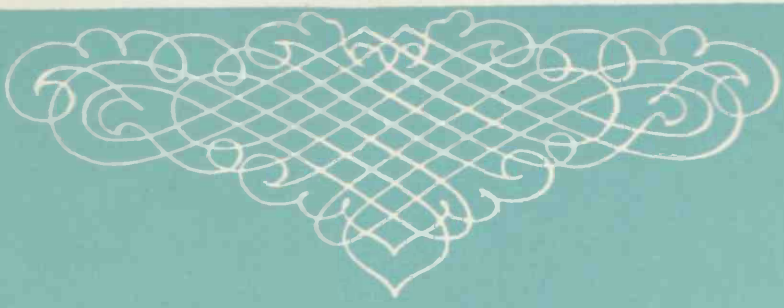
THE UNIVERSITY OF ARIZONA RECORD



Seventy-fifth Anniversary



1960 SUMMER SESSION

TUCSON

BOARD OF REGENTS
UNIVERSITIES AND STATE COLLEGE OF ARIZONA

EX-OFFICIO

THE HONORABLE PAUL J. FANNIN, B.A. .....Governor of Arizona

W. W. DICK, B.A., M.A. .....State Superintendent of Public Instruction

APPOINTED

WILLIAM R. MATHEWS, A.B., LL.D., *President*

ALEXANDER G. JACOME, B.S., *Secretary*

LYNN M. LANEY, B.S., J.D., *Treasurer*

JOHN G. BABBITT, B.S.

VIVIAN LAHTI BOYSEN, A.B., A.M.

ELWOOD W. BRADFORD, B.S.

O. D. MILLER, A.B.

SAMUEL H. MORRIS, A.B., J.D., LL.D.

STATEMENT OF MAILING PRIVILEGE

The *University of Arizona Record* is issued seven times a year. Published monthly during July, August, and October and semi-monthly during April and June.

Entered as second-class matter April 28, 1923, at the post office at Tucson, Arizona, under the Act of August 24, 1912.

SUMMER SESSION 1960 — Errata Sheet

Fees in this catalogue are subject to change. Consult regular schedule of hours to determine correct course fees.

ACCOUNTING (page 35–36)

101a-b. Change Raby to Staff.

AGRICULTURAL EDUCATION (page 36)

222s. Add: Instructor Broadbent. 391s. Descrip.: Teaching Agric. Prac.

ART (page 37–38)

Add:
3a-3b. Design I (2-2) I,II, 1:00-4:00 .. ..Cook
6a. Change II to I,II. Change fee to $10.00.
55ab. Change fee to $5.00. Change time to 7:30-10:40.
210a. Delete.
243 a.b. Change II to I,II. Add: 1 term, instructor Cook; time 12:30-3:30.
245 a.b,c.d. Change II to I,II. Change time to 9:00-12:00.
255 a.b,c.d. Delete Staff. Change fee to $5.00. Change time to 7:30-10:40.
280 a.b,c.d. Delete Staff. Change fee to $5.00. Change time to 7:30-10:40.

BUSINESS ADMINISTRATION (page 39–40)

7. Change Staff to Loveday. 255. Add: Laboratory to be arranged.
155. Add: Voluntary labs.arranged

CHEMISTRY (page 41)

Note: A breakage deposit of $8.00 is required for all laboratory courses.
140a-b. Change Sands to first term and Roberts to second term.

CIVIL ENGINEERING (page 41–42)

5. Change time to 7:00-8:40 and 1:30-3:00.
6. Change Ross to Harrenstien. 131. Change Ross to Harrenstien.

DRAMA (page 42)

300. Change time to be arranged.

EDUCATION (page 43–49)

217. Delete fee. 295bs. Change (1-2) to (2).
293s. Change Staff to Melson.

ELECTRICAL ENGINEERING (page 49)

22. Time: 8:50-10:20 MWF and 8:50-10:50 TThS.
80. Time: 7:00-8:30. 154. Time: 10:30-12:00.
122. Time: 8:50-10:20. 155. Time: 1:00-4:00 TTh and
123. Time: 1:40-4:00 MWF. 8:00-11:00 S.
124. Time: 8:50-10:20. 240. Time: 8:50-10:20.
125. Time: 1:00-4:00. 241. Time: 1:00-4:00 MWF.
132. Time: 8:50-10:20. 322. Time: 8:50-10:20.

ENGLISH (page 50)

1D Change time to 9:00-10:40. 3B Change Staff to Carr.
3A Change Staff to Senob. 3C Change Staff to Leininger.

GEOLOGY (page 51)

212s. Chg. date to June 13 to June 29. 213s. Change date to June 30-July 16.

GOVERNMENT (page 52–53)

2. Change Mann to Kelso. 237. Delete.
226. Time: 7:00-8:40.

HEALTH EDUCATION (page 53)

71. Sec. B. Change time to 7:00-8:40 266. Change time to 10:50-12:30.

HOME ECONOMICS (page 54)

13s. Change time to 10:30-11:40 MWF; Lab. 5:00-8:00 p.m., TTh. Change fee to $7.00.
200sa. Change course no. to 200As. 310. Change I to II.
221s. Change time to 9:30-10:20. 337s. Change time to 8:00-9:10.

HORTICULTURE (page 54)

290s. Change time to 1:30-3:55.

HUMANITIES (page 54–55)

50aC Change Beattie to Hamilton. 50bA Change Sigsworth to Childs.

MATHEMATICS (page 55–56)

79aB. Change Hancock to Diamos. 79b. Change Staff to Slepian.
79aA. Change Diamos to Hancock. 201. Delete 7:00. Chg. Staff to Myers.

MECHANICAL ENGINEERING (page 57)

141. Change time to 7:30-8:40 and 10:30-1:30.

MINING AND METALLURGY (page 57)

209. Change course number to 210.

MUSIC (page 57-60)

1a. Change Johnson to Hardisty. 370s. Change course number to 270s.
231a. Change Johnson to McBride. Applied Mus. Change Johnson to Staff.

NURSING

Add: Conference on Communications in the Professions (1) II..... .. ..Hall, Coulter
200As. 8:45-12:00 and 1:30-4:30 (August 15-19) Identical with Home Economics 200As.)

PHARMACY (page 60)

Note: A laboratory breakage deposit of $2.50 is required for all courses for which a course fee is noted below.

PHYSICAL EDUCATION FOR WOMEN (page 62)

89. Change time to 9:00-10:00.

PHYSICS (page 63)

2a-2b. Terms should read I-II.
20. Change Odd week of month 1:30-3:30 T. Change Staff to Leavitt.

ROMANCE LANGUAGES (page 63–64)

1As. Spanish Change time to 10:30-11:40. 75a-b. Change time to 10:30-11:40.

SECRETARIAL STUDIES (page 65–66)

6. Change Staff to Weston. 7. Change Staff to Weston.

SPEECH (page 67–68)

Add: 300. Introduction to Graduate Study in Speech (2) I. (Time to be arranged).....Lynn

WATERSHED MANAGEMENT (page 68)

228s. Range Management. Change time to 1:30-3:50.

ZOOLOGY (page 68–69)

12 Change Demonstration 9:40-11:40 MWF.

THE UNIVERSITY OF ARIZONA RECORD

Seventy-fifth Anniversary

SUMMER SESSION ANNOUNCEMENT 1960

First Term
June 13 — July 16

Second Term
July 18 — August 20

Special Programs Begin June 2, 6, 13, 17, 27, 30,
July 18 and August 15

Published by
Vol. LIII No. 1 The University of Arizona Press April 1, 1960

CALENDAR OF THE 1960 SUMMER SESSION

FIRST TERM, June 13, M. — July 16, Sat.

Special program begins — Mine Surveying ..... June 2, Th.
Special program begins — Range Field Studies ..... June 6, M.
Residence Halls open at 8:00 a.m. ..... June 12, Sun.
Registration ..... June 13, M.

Special programs begin — Basic Evaluation Adopted to Extension Teaching, Principles in the Development of Youth Programs, Administration of the County Extension Service, Teaching Agricultural Practices, Elementary Science Workshop, Field Geology, Conference on Techniques in Clothing Construction, Landscape Management, Seminar in Junior-High Vocal Music, Seminar in High-School Instrumental Music, Seminar in Beginning String Instruction, Physical Fitness for Children and Youth, Business Education Workshop, Speech Correction Workshop ..... June 13, M.

Special programs begin — Field Course in Archaeology, Advanced Field Course in Archaeology ..... June 17, F.
Last day of registration for credit (except for workshops and courses which begin later) ..... June 20, M.
Special programs begin — Humanities Study Tour, General Music Education Workshop, Seminar in Elementary Music Education ..... June 27, M.
Special programs begin — Visual Materials for Teaching Agriculture, Principles of Range Management ..... June 30, Th.
Examinations for the First Term begin ..... July 15, F.
First Term ends ..... July 16, Sat.

SECOND TERM, July 18, M. — August 20, Sat.

Residence Halls ready for new students at 8:00 a.m. ..... July 17, Sun.
Registration ..... July 18, M.
Special programs begin — Aviation Education Workshop, Workshop on Education of Migrant Children, Education Workshop on Counseling and Rehabilitation of Handicapped Children and Adults ..... July 18, M.
Courses begin ..... July 19, T.
Last day of registration for credit (except for workshops and courses which begin later) ..... July 25, M.
Special program begins — Conference on Communications in the Professions ..... Aug. 15, M.
Examinations for the Second Term begin ..... Aug. 19, F.
Second Term ends ..... Aug. 20, Sat.

TABLE OF CONTENTS

The University of Arizona

The University of Arizona, which was founded in 1885 and first opened its doors to students in 1891, is a member of the National Association of State Universities, The Association of Land Grant Colleges and Universities, and the North Central Association of College and Secondary Schools.

The University is organized for instructional purposes as 10 colleges, 4 schools, and 54 departments, and includes also 23 divisions of research and extension. The bachelor's degree is offered in 174 fields, the master's degree in 69, and the doctor's degree in 29. The resident enrollment for the First Semester of 1959-60 was 11,772, and that for the Summer Session of 1959, was 4,270.

The beautiful campus is located in the residential district of the historic city of Tucson, which was founded in 1776 as a Spanish presidio and is today a modern American metropolitan community with a population in excess of 200,000. The altitude of 2,400 feet, the dryness, and the sunshine unite to provide one of the most healthful climates in the world.

Semi-tropical planting makes the campus unique. An excellent highway leads in an hour and a half to the pine forest of the Santa Catalina mountains at an altitude of 9,000 feet, and another to Nogales in Old Mexico, 70 miles to the south.

ADMINISTRATION

OFFICERS OF ADMINISTRATION

RICHARD ANDERSON HARVILL, Ph.D. (1934).....President of the University

ROBERT LOGAN NUGENT, Ph.D. (1932).....Executive Vice-President of the University

DAVID LYALL PATRICK, Ph.D. (1934).....Vice-President for Academic Affairs; Coordinator of Research

FRANCIS PENDLETON GAINES, JR., Ph.D. (1959).....Dean of Continuing Education and the Summer Session

JOHN DANIEL LYONS, J.D. (1947).....Dean of the College of Law

CURTIS BRADFORD MERRITT, Ph.D. (1949).....Acting Dean of the College of Education

FRANCIS ALBERT ROY, Ph.D. (1934).....Dean of the College of Liberal Arts

WILLIS RALPH BREWER, Ph.D. (1949).....Dean of the College of Pharmacy; Chairman of the Committee on Scholarships and Awards

HAROLD EDWIN MYERS, Ph.D. (1956).....Dean of Agriculture

JAMES DONALD FORRESTER, GEOL. E. (1956).....Dean of the College of Mines; Director of the Arizona Bureau of Mines

SHAW LIVERMORE, Ph.D. (1957).....Dean of the College of Business and Public Administration

SIDNEY WAHL LITTLE, M.Arch. (1958).....Dean of the College of Fine Arts

THOMAS LYLE MARTIN, JR., Ph.D. (1953).....Dean of the College of Engineering; Director of the Engineering Experiment Station

HERBERT DAWSON RHODES, Ph.D. (1943).....Dean of the Graduate College

ALTER LOUIS SLONAKER, M.A. (1922).....Dean of Men

KAREN LOUIS CARLSON, Ph.D. (1945-49; 1951).....Dean of Women

FLEMING BENNETT, B.S.L.S. (1952).....Librarian

DAVID LAWRENCE WINDSOR, M.A. (1945).....Registrar and Director of Admissions; Secretary of the Faculty

KENNETH R. MURPHY, C.P.A., B.S. (1951).....Comptroller

JAMES E. GIBSON, M.A. (1957).....Assistant to the Dean of Continuing Education and the Summer Session

THE SUMMER SESSION COMMITTEE

PENDLETON GAINES, Ph.D.....Chairman
Dean of Continuing Education and the Summer Session

ROBERT L. NUGENT, Ph.D.
Executive Vice-President of the University

DAVID L. WINDSOR, M.A.
Registrar and Director of Admissions

CURTIS B. MERRITT, Ph.D.
Acting Dean of the College of Education

ROY F. GRAESSER, Ph.D.
Professor of Mathematics

ORGANIZATION OF THE UNIVERSITY OF ARIZONA

COLLEGE OF AGRICULTURE

School of Home Economics; Departments of: Agricultural Chemistry and Soils, Agricultural Economics, Agricutural Education, Agricultural Engineering, Agronomy, Animal Pathology, Animal Pathology, Animal Science, Botany, Dairy Science, Entomology, Horticulture, Plant Breeding, Plant Pathology, Poultry Science, Watershed Management

COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION

Departments of: Accounting, Business Administration, Economics, Marketing, Secretarial Studies and Business Education, Sociology

COLLEGE OF EDUCATION

COLLEGE OF ENGINEERING

Departments of: Civil Engineering, Electrical Engineering, Mechanical Engineering, Nuclear Engineering, Numerical Analysis

COLLEGE OF FINE ARTS

School of Music; Departments of: Architecture, Art, Drama, Speech

COLLEGE OF LAW

COLLEGE OF LIBERAL ARTS

School of Nursing; Departments of: Anthropology, Astronomy, Bacteriology and Medical Technology, Chemistry, Classics, English, German, Government, History, Journalism, Mathematics, Meteorology and Climatology, Philosophy and Psychology, Physics, Romance Languages, Zoology; Committee on Oriental Studies

COLLEGE OF MINES

Departments of: Chemical Engineering, Geology, Mining and Metallurgical Engineering

COLLEGE OF PHARMACY

GRADUATE COLLEGE

Committees of: Biochemistry and Nutrition, Geochronology, Public Administration

GENERAL DEPARTMENTS

School of Military Science and Tactics
Department of Physical Education for Men
Department of Physical Education for Women

SUMMER SESSION

DEPARTMENTS AND AFFILIATIONS OF RESEARCH AND SPECIAL SERVICE

Agricultural Experiment Station, Agricultural Extension Service, Applied Research Laboratory, Arizona Bureau of Mines, Arizona State Museum, Association of Universities for Research in Astronomy (AURA Inc.), Bureau of Audio-Visual Services, Bureau of Business and Public Research, Bureau of Ethnic Research, Division of Continuing Education, Division of Correspondence Instruction, Cooperative Wildlife Research Unit, Engineering Experiment Station, Geochronology Laboratories, Institute of Atmospheric Physics, Institute of Water Utilization, Laboratory of Tree-Ring Research, Numerical Analysis Laboratory, Poisoning Control Information Center, Radio-Television Bureau, Steward Observatory, University Committee on Atmospheric Research.

AFFILIATED INSTITUTIONS

Arizona Feed and Fertilizer Control Office; Arizona State Laboratory; United States Bureau of Mines

INVITATION FROM THE DEAN

to Undergraduates, Teachers and other Graduate Students, 1960 High-School Graduates, and others interested in the 1960 Summer Program of The University of Arizona:

The Administration and Faculty of the University of Arizona cordially invite you to participate in our timely and challenging program summarized on pages 4 and 5.

The Summer Session will be held on the beautiful campus in Tucson, where there will be offered twelve notable workshops and more than four hundred courses, and where all the many facilities will be available for your use. The University Library contains excellent collections and the staff will welcome your requests for assistance.

All buildings used for summer activities are air conditioned; and you are assured of comfortable living, classroom, and recreational facilities. A full schedule of recreational and informal educational activities has been developed to enrich your formal academic program and to provide worthwhile relaxation.

In accordance with the special hope that summer session students will become acquainted with the varied research programs of the University, you are invited to visit the many departments where work is going on in scores of areas of investigation.

I trust that I may have the pleasure of greeting you personally.

Sincerely yours,

Pendleton Gaines
Dean of the Summer Session

THE UNIVERSITY OF ARIZONA 1960

COURSES

455 courses in 44 fields on the campus in Tucson.

WORKSHOPS

12 notable worshops on the campus.

VISITING CONSULTANTS

Participating in the workshops will be many visiting specialists of national reputation.

PUBLIC LECTURES

Visiting consultants and University of Arizona specialists will join in a series of 18 public lectures on topics of current interest.

RESEARCH

Graduate students in many fields will be actively engaged in research work toward the master's and doctor's degree. All University research facilities will be in full operation, and summer session students are invited to visit these activities on guided tours.

MUSEUMS

Summer session students are also invited to participate in guided tours of three notable museums located on or adjacent to the campus: *The Arizona State Museum, The University Art Galleries,* including the famous Kress collection illustrative of six centuries of European painting, and *The Museum of the Arizona Pioneers Historical Society.*

CONFERENCES ON CAMPUS

Summer session students find it stimulating to share the campus with persons attending a succession of national and statewide conferences and other events.

SCIENCE INSTITUTE

June 13 - August 6 — Sponsored by the National Science Foundation, an eight-week course for selected secondary teachers of science and mathematics.

SUMMER LAW SEMESTER

June 13 - August 9 — Progress toward the LL.B. for students of law.

HIGH-SCHOOL FINE ARTS SUMMER CAMP

June 12 - June 25. Drama, Dance, Art, Music, Photography, Speech, Journalism, Radio-TV, Twirling. Two weeks of instruction, inspiration, and fun for high-school students under the guidance of selected master teachers. Write for brochure.

SUMMER SESSION PROGRAM

TRAVEL-STUDY TOURS

EUROPE — A study tour of Europe conducted by a member of the Humanities staff and closely integrated with the Humanities course. Lectures begin in New York City and continue on the boat and during the tour of the continent. Leave New York June 27; return to New York August 10. For full information write to Dr. Albert F. Gegenheimer, Department of English, The University of Arizona.

FIELD SCHOOLS

ARCHAEOLOGY — Point of Pines, Arizona, June 17-August 12. For selected advanced students.

GEOLOGY — St. Michaels, Arizona. June 13-July 16. For undergraduate geologists.

GUADALAJARA SUMMER SCHOOL

Guadalajara, Mexico — A bilingual Summer School sponsored by the University of Arizona in cooperation with the members of the faculty of Stanford University, July 4-August 12.

PRESCOTT SUMMER PROGRAM

Prescott, Arizona, July 18-August 20. Courses in fine arts and other fields for 1960 high school graduates and the general public.

HEALTHFUL CLIMATE—AIR CONDITIONING

All facilities used by the Summer Session are completely air conditioned.

RECREATION

Every effort is made to balance intensive study programs with recreational activities: Summer theater, concerts, eighteen lectures, campus cinema, swimming, tennis, and free trips to the pine forests of Mt. Lemmon, Bisbee, Tombstone, Old Mexico, Arizona-Sonora Museum, Saguaro National Monument, Colossal Cave, Old Tucson, San Xavier Mission. Swimming, tennis and golf are available on or near the campus. Low cost weekend tours will be arranged for groups of 35 or more to the Grand Canyon, Hermosillo and Guaymas in Old Mexico, San Diego, Disneyland, and guest ranches.

INFORMATION

For information on any aspect of the Summer Session write to The Summer Session, The University of Arizona, Tucson, Arizona.

BUILDINGS NORTH OF THE CIRCLE

INSTRUCTION

AKMAJIAN, DIRAN (1955)*.....Assistant Professor of Music
Diploma from Juilliard School of Music, 1949; Certificate from Conservatory of Santa Cecilia, Rome, 1953; B.M., University of Arizona, 1957.

ALLEN, RUPERT C., JR. (1956) .....Instructor in Spanish
A.B., University of California, 1951; M.A., University of California, 1953.

ALLEN, RUTH AMELIA (1955).....Associate Professor of Home Economics
B.S., Iowa State College, 1934; M.S., Iowa State College, 1940.

ANDERSON, RORERT R. (1959).....Associate Professor of Spanish
A.B., University of Denver, 1952; M.A. University of Alabama, 1953; Ph.D., University of California at Berkeley, 1957.

ASMUS, RALPH.....Visiting Lecturer in Secretarial Studies
B.S., Bowling Green State University, 1936; M.A., Columbia University, 1941; Ed.D., Columbia University, 1954.

BARKLEY, MARGARET VIRGINIA (1959).....Associate Professor of Home Economics.
B.S., Millikin University, 1940; M.S., University of Illinois, 1951;
Ed.D., University of Illinois, 1956.

BARRINGER, JOHN L. (1958).....Visiting Lecturer in Physical Education for Men.
A.B., University of Arizona, 1938.

BASSAN, MAURICE (1958).....Instructor in English
B.A., New York University, 1951; M.A., New York University, 1952.

BEATSON, JAMES A. (1950).....Associate Professor of History
B.A., Duke University, 1947; M.A., Duke University, 1948;
Ph.D., Duke University, 1952.

BEATTIE, ARTHUR (1951).....Professor of French
B.A., University of British Columbia, 1928; M.A., University of British Columbia, 1931; Ph.D., Stanford University, 1954.

---

* *Year of first appointment to the faculty.*

BELL, MARY ELIZABETH (1959).....Assistant Professor of Education
B.S., Indiana State Teachers College, 1939;
M.S., Butler University, 1949; Ed.D., Indiana University, 1957.

BENTZ, DONALD NICHOLAS (1958).....Assistant Professor of Library Science
B.S., University of Wisconsin, 1948; M.S., University of Wisconsin, 1949;
M.S.L.S., University of Wisconsin, 1955;
A.M.L.S., University of Michigan, 1958.

BEST, EDWARD E. JR. (1956).....Instructor in Classics
A.B., University of North Carolina, 1952; M.A., University of
North Carolina, 1954; Ph.D., University of North Carolina, 1957.

BLECHA, MILO KASAL (1957).....Assistant Professor of Education
B.A., Nebraska State Teachers College, 1947; M.A., University of Wyoming, 1953;
Ed.D., University of Nebraska, 1956.

BLOOM, JOHN H. (1951).....Professor of Music;
Director of Choral Activities.
A.B., Cornell College, 1931; M.A., University of Iowa, 1934.

BOGART, FRED O., C.P.A. (1946).....Professor of Accounting
B.S., Ball State Teachers College, 1932; M.S., Indiana University, 1944.

BOLAND, VINCENT FRANCIS, JR. (1949).....Assistant Professor of Economics
A.B., University of Buffalo, 1941; Ph.D., University of California,
Los Angeles, 1959.

BOONE, EDGAR J. (1959).....Professor of Agricultural Education
B.S., Louisiana State University, 1951; M.S., University of Wisconsin, 1955;
Ph.D., University of Wisconsin, 1959.

BRADSHAW, GORDON V. (1957).....Graduate Assistant in Zoology
B.S., Central Missouri State College, 1953; M.S., Kansas State College, 1956.

BRETALL, ROBERT WALTER (1947).....Associate Professor of Philosophy
A.B., Princeton University, 1935; A.M., Princeton University, 1937;
Ph.D., Princeton University, 1938.

BROOKS, JOHN (1924).....Professor of Spanish and Portuguese
A.B., Harvard University, 1917; Ph.D., University of Wisconsin, 1924.

BROWN, ELMER J. (1916).....Dean Emeritus of the College of Business
and Public Administration; Professor of Business Administration and
Economics.
B.S., Greenville College, 1908; A.M., University of Illinois, 1909;
Ph.D., University of Illinois, 1911.

BUCHHAUSER, ANDREW W. (1938).....Professor of Music;
Director of the School of Music
B.M., University of Arizona, 1937; M.A., University of Arizona, 1938

BURKE, RICHARD KITCHENS (1957).....Assistant Professor of Government
B.A., University of Arkansas, 1942; LL.B., University of Arkansas, 1948;
Ph.D., Vanderbilt University, 1958.

CALMES, ROBERT EDWARD (1958).....Assistant Professor of Education
B.A., Hastings College, 1949; M.A., University of Denver, 1950;
Ed.D., University of Denver, 1958.

CARSON, CHARLES.....Visiting Lecturer in Education

CHACE, JAMES E. (1959).....Visiting Professor of Business Administration
B.A., Amherst College, 1923; M.B.A., Harvard University, 1925;
Ph.D., University of Chicago, 1944; LL.B., University of Florida, 1951.

CHAMBERS, DWIGHT OLIVER (1957).....Assistant Professor of Spanish
B.S., University of Kansas, 1950; M.A., University of Kansas, 1951;
Ph.D., University of Kansas, 1956.

CHILDS, R. BARNEY (1956).....Instructor in English
B.A., University of Nevada, 1949; B.A., Oxford University, 1951; M.A.,
Oxford University, 1955; Ph.D., Stanford University, 1959.

CHRISTIANSEN, HARLEY (1960).....Assistant Professor
B.S., University of Minnesota, 1952;
Ph.D., University of Minnesota, 1959.

CHRISTOPHERSON, VICTOR ALDEN (1958).....Professor of Home Economics
B.S., Columbia University, 1949; M.A., Columbia University, 1949;
Ed.D., Columbia University, 1953.

CHURCH, EDNA ERICKSON (1948).....Assistant Professor of Piano
Graduate of MacPhail College of Music, 1928; pupil of Harrison Wall Johnson, Frank Mannheimer, and Alicia de Larrocha.

CLARK, L. D. (1955).....Instructor in English
B.S., Columbia University, 1953; M.A., Columbia University, 1954.

CLINE, RUSSELL WALTER (1937).....Professor of Agricultural Education; Head of the Department.
B.S., North Carolina State College, 1924; M.S., Virginia Polytechnic Institute, 1928; Ph.D., Ohio State University, 1939.

COAN, RICHARD WELTON (1957).....Assistant Professor of Psychology
A.B., University of California, Berkeley, 1948;
M.A., University of California, Berkeley, 1950;
Ph.D., University of Southern California, 1955.

COCKRUM, E. LENDELL (1952).....Associate Professor of Zoology; Curator of Mammals.
B.Ed., Southern Illinois University, 1942; Ph.D., University of Kansas, 1951.

CORDELL, JOHN W. (1956).....Instructor in Economics
A.B., University of California, 1945; M.A., University of Pittsburgh, 1956.

COULTER, PEARL PARVIN (1957).....Professor of Nursing; Director of the School of Nursing.
A.B., University of Denver. 1926; M.S., University of Denver, 1927.

COWAN, JOSEPH LLOYD (1958).....Instructor in Philosophy
B.A., College of the University of Chicago, 1950;
M.A., Universtiy of Chicago, 1955.

CROWDER, WILLIAM WALDROP (1958).....Assistant Professor in Education
B.A., Howard College, 1944; M.Ed., University of Louisville, 1955;
Ph.D., Indiana University, 1958.

CUNEO, WILLIAM J. (1959).....Instructor in French
B.A., University of Massachusetts, 1958;
M.A., University of Wisconsin, 1959.

CUOMO, GEORGE M. (1956).....Instructor in English
A.B., Tufts University, 1952; M.A., Indiana University, 1955.

DAVIS, JACK EMORY (1949).....Assistant Professor of Spanish
B.A., University of Arizona, 1947; M.A., Tulane University, 1948;
Ph.D., Tulane University, 1956.

DAVIS, JEFFERSON C. (1946).....Instructor in Physics
B.S.E.E., North Carolina State College, 1928; M.S., University of Hawaii, 1939;
E.E., North Carolina State College, 1941.

DAVIS, RUSSELL P.....Graduate Assistant in Zoology
B.A., University of Redlands, 1950; M.A., Long Beach State College, 1956.

DE BRUM, JOSEPH, Ph.D.....Visiting Consultant
Professor, San Francisco State College.

DELUCIA, LAWRENCE A. (1959).....Instructor in Business Administration
B.A., Cornell University, 1956; M.B.A., Cornell University, 1957.

DENNISTON, DOUGLAS GILBERT (1959).....Assistant Professor of Art
B.F.A., University of New Mexico, 1945;
M.A., University of New Mexico, 1948.

DENTON, JOHN HENRY (1952).....Associate Professor of Business Administration.
LL.B., St. John's University, 1936.

DIAMOS, GEORGE K. (1959).....Instructor in Mathematics
B.S., University of Arizona, 1926;
M.S., California Institute of Technology, 1927.

DIMMICK, KENNETH DALE (1957).....Instructor in Speech
B.A., Northwestern State College, 1956
M.A., Ohio University, 1957.

DORR, EUGENE.....Visiting Consultant
Arizona State Supervisor of Distributive Education.

DREVDAHL, ELMER RANDOLPH (1955).....Associate Professor of Mining Engineering.
B.S., Michigan College of Mining and Technology, 1948;
M.S., University of Washington, 1951.

DUBOIS, ROBERT LEE (1952)..... .....Associate Professor of Geology
B.S., University of Washington, 1949. M.S., University of Washington, 1950;
Ph.D., University of Washingotn, 1954.

ELLIS, ALBERT T. .....Instructor in Botany
B.S., University of Arizona, 1957;
M.S., Universtiy of Arizona, 1959.

EMERICK, A. PAULA (1959).....Graduate Assistant in Speech
B.A., University of Arizona, 1959.

EWING, RUSSELL CHARLES (1937).....Professor of History; Head of the Department.
B.A., University of California, 1929; M.A., University of California, 1931;
Ph.D., University of California, 1934.

FAIN, SAMUEL S. (1942-43; 1946).....Professor of Music
B.M.Ed., Northwestern University, 1940; M.A., University of Arizona, 1951;
D.M.A., University of Southern California, 1956.

FAZIO, STEVE (1942).....Assistant Professor of Horticulture
B.S., University of Arizona, 1940;
M.S., University of Arizona, 1951.

FOLKNER, JOSEPH SAMUEL (1952).....Assistant Professor of Horticulture
B.S., University of Massachusetts, 1939;
M.S., University of Arizona, 1952.

FOLTZ, JACK O., C.P.A. (1957).....Assistant Professor of Accounting
B.S., University of Wichita, 1948;
M.B.A., University of Texas,, 1949.

FORKNER, HAMDEN, Ph.D.....Visiting Consultant
Columbia University

FOSTER, JOSEPH F., JR. (1942-44; 1946).....Assistant Professor of Mathematics.
B.A., Ohio State University, 1939; M.S., State University of Iowa, 1941;
M.A., Harvard University, 1942; Ph.D., State University of Iowa, 1952.

FRUCHTMAN, EFRIM (1959).....Assistant Professor of Music
B.S., Juilliard School of Music, 1948;
M.A., University of North Carolina, 1951;
Ph.D., University of North Carolina, 1960.

GAEDE, RUTH BRANT (1956)..... .....Instructor of English
B.A., University of Arizona, 1954;
M.A., University of Arizona, 1957.

GANOUNG, LAURA.....Visiting Lecturer in Education
B.S. Edinboro State Teachers College, 1940;
M.Ed., Pennsylvania State University, 1944.

GARDNER, MURRAY CURTIS (1959).....Instructor in Geology
B.S., Brooklyn College, 1953.

GARNER, AGNES (1956).....Instructor in Physical Education for Women
B.S., Southwest Texas State Teachers College, 1944;
M.A., Southwest Texas State Teachers College, 1948.

GARRETSON, OLIVER KELLEAM (1930).....Professor of Education
A.B., University of Oklahoma, 1918; M.A., University of Texas, 1926;
Ph.D., Columbia University, 1929.

GAVLAK, EMIL STEPHEN (1957).....Associate Professor of Education
B.A., King College, 1940; M.Ed., The Pennsylvania State University, 1941;
Ed.D., George Peabody College, 1954.

GEGENHEIMER, ALBERT FRANK (1941-43; 1945).....Professor of English
A.B., Yale University, 1932; M.A., Western Reserve University, 1936;
Ph.D., University of Pennsylvania, 1940.

GETTY, HARRY THOMAS (1936).....Associate Professor of Anthropology
A.B., Baker University, 1928; M.A., University of Arizona, 1932;
Ph.D., University of Chicago, 1950.

GLOYD, HOWARD K. (1958).....Research Associate in Zoology
B.S., Ottowa University, 1924; M.S., Kansas State College, 1929;
Ph.D., University of Michigan, 1937; D.Sc., Ottowa University, 1942.

GOMEZ, ROSENDO A. (1948).....Associate Professor of Government
Ph.B., University of Vermont, 1939; M.A., University of Minnesota, 1947;
Ph.D., University of Minnesota, 1950.

GRAESSER, ROY F. (1926).....Professor of Mathematics
A.B., University of Illinois, 1919; A.M., University of Illinois, 1922;
Ph.D., University of Illinois, 1926.

GRANGER, BYRD HOWELL (1951).....Instructor in English
A.B., Goucher College, 1934; M.A., University of Arizona, 1953.

GROSS, CHARLES JAMES, JR. (1957).....Instructor in Classics
A.B., Tufts College, 1953; A.M., Tufts College, 1954.

GROSSMAN, MAURICE K. (1955).....Assistant Professor of Art
B.S., Wayne University, 1950; M.A., Ohio State University, 1953.

GUSTAFSON, A. M.....Visiting Lecturer in Education
A.B., Wheaton College, 1930; A.M., University of Arizona, 1938;
A.M., University of Michigan, 1950; Ph.D., University of Arizona. 1955.

HABERLAND, JOHN ANDREW (1957).....Assistant Professor in Education
A.B., Hope College, 1948; M.A., Northwestern University, 1949;
Ph.D., Northwestern University, 1956.

HAIMANN, THEO (1957-58).....Assistant Professor of Business Administration.
Ph.D., University of Bonn, 1934; M.B.A., Washington University, 1956.

HAINES, PETER, Ph.D.....Visiting Lecturer in Secretarial Studies

HALL, WILLIAM F.....Visiting Lecturer in Education
A.A., Virginia Jr. College, 1938; B.S., Hamline University, 1940;
M.A., University of Minnesota, 1941; Ph.D., University of Minnesota, 1948.

HALL, DAVID JOHN (1947).....Professor of Civil Engineering
B.S., Michigan State College, 1936;
M.S., University of Michigan, 1945.

HALL, RUTH C. WHITEHOUSE (1956).....Professor of Home Economics; Director of the School of Home Economics.
B.S., Ohio State University, 1947; M.S., Purdue University, 1948;
Ph.D., Purdue University, 1956.

HAMBENNE, JOSEPH R. (1950).....Instructor in Sociology
B.A., Ball State Teachers College, 1937;
M.A., University of Illinois, 1947.

HANCOCK, HARRY L. (1957).....Instructor in Mathematics
B.S., University of Arizona, 1956;
M.S., University of Arizona, 1958.

HANSMA, JACK EDWARD (1957).....Associate Professor of Health Education
B.S., Eastern Michigan College, 1940; M.A., University of Michigan, 1941;
Ed.D., New York University, 1953.

HARDISTY, DONALD MERTZ (1958).....Instructor in Music
B.M., Montana State University, 1955;
M.M.E., Montana State University, 1956.

HARRIS, WILLIAM H. (1959).....Assistant Professor of Education
B.S., University of Missouri, 1944; M.A., University of Missouri, 1945;
Ed.D., University of Kentucky, 1951.

HARTSELL, ONNIE MICHAEL (1957).....Professor of Music
A.B., Berea College, 1941; M.A., Columbia University, 1946;
Ed.D., Columbia University, 1951.

HAURY, EMIL WALTER (1928-30; 1937).....Professor of Anthropology; Head of the Department.
B.A., University of Arizona, 1927; M.A., University of Arizona, 1928;
Ph.D., Harvard University, 1934.

HEATH, ROBERT W. (1959).....Lecturer in Education
B.S., Purdue University, 1954; M.S., Purdue University, 1955;
Ph.D., Purdue University, 1957.

HECHT, MELVIN E. (1953-54; 1956).....Assistant Professor of Business Administration.
A.B., Valparaiso University, 1948;
M.A., Northwestern University, 1950.

HERBER, BERNARD P. (1957).....Assistant Professor of Economics
B.A., Loyola University, 1954; M.A., University of Arizona, 1955.

HIGLEY, LUTIE L.....Reference Librarian

HOWARD, RUSSELL MARION (1920).....Professor of Accounting
B.S.C., Oregon State College, 1914;
M.S., University of Arizona, 1924.

HUDSON, PHILLIP G. (1938).....Professor of Economics; Head of the Department.
B.S., University of Arizona, 1930; M.A., University of Arizona, 1933;
Ph.D., University of Illinois, 1938.

HUGGINS, JACK W. (1945).....Assistant Professor of English
B.A., University of Oregon, 1936; M.A., University of California, 1939.

HUNT, JACOB TATE (1957).....Associate Professor of Education
B.A., Maryville College, 1938; M.S., University of Tennessee, 1941;
Ph.D., University of California, 1950.

HUNTLY, PATRICK (1958).....Assistant Professor of Economics
B.A., Washburn University, 1951;
M.A., University of North Carolina, 1955.

HURLBUTT, ROBERT HARRIS, III (1952).....Associate Professor of Philosophy.
A.B., Drury College, 1947; M.A., University of Michigan, 1948;
M.A., University of California, 1950; Ph.D., University of California, 1953.

IRMSCHER, WILLIAM (1950).....Associate Professor of English
B.A., University of Louisville, 1941; M.A., University of Chicago, 1947;
Ph.D., Indiana University, 1950.

JAFFE, GAIL ARDA (1959).....Instructor in Speech
B.S., Northwestern University, 1958;
M.A., Northwestern University, 1959.

JOHNSON, HENRY PICKENS, JR. (1952).....Professor of Music; Director of the University Orchestra
B.Mus., University of Arizona, 1933; M.Mus., University of Arizona, 1935;
M.A., Columbia University, 1948.

KELLY, JOSEPHINE.....Visiting Lecturer in Education
B.S., Texas State College for Women, 1932;
M.A., Texas State College, 1937.

KELSO, PAUL (1946).....Professor of Government; Acting Head of the Department.
B.A., Ball State Teachers College, 1933; M.A., University of Wisconsin, 1938;
Ph.D., Ohio State University, 1944.

KEPPLER, CARL FRANCIS (1949-52; 1954).....Assistant Professor of English
B.A., Princeton University, 1930; M.A., University of Arizona, 1951;
Ph.D., University of Michigan, 1956.

KIDWELL, RICHARD ALVIN (1953).....Assistant Professor of Secretarial Studies and Business Education.
B.S., University of Idaho, 1949; M.Ed., University of Washington, 1951;
Ed.S., Stanford University, 1955.

KIEFER, H. CHRISTIAN (1950).....Instructor in English
B.A., Villanova College, 1947;
M.A., Columbia University, 1948.

KING, WILLIAM HOWARD, JR. (1956).....Assistant Professor in Health Education.
B.A., Brown University, 1946; M.Ed., Boston University, 1949;
D.Ed., Boston University, 1956.

KJELSON, LEE (1954).....Visiting Lecturer in Music
Director of Choral Activities at Western State College, Gunnison, Colorado.

KLAISS, DONALD STANLEY (1947).....Professor of Sociology
A.B., Eureka College, 1928; B.D., University of Chicago, 1934;
Ph.D., University of Chicago, 1934.

KLEIN, RAYMOND LOUIS (1957).....Assistant Professor of Education
B.S., University of Wisconsin, 1943; M.A., State University of Iowa, 1947;
Ed.D., Duke Unviersity, 1953.

KREIGH, JAMES DOUGLAS (1958).....Assistant Professor of Civil Engineering.
B.S., University of Colorado, 1955;
M.S., University of Colorado, 1958.

KRUMLAUF, HARRY E. (1945).....Professor of Mining Engineering
B.S., Michigan College of Mining and Technology, 1928;
E.M., Michigan College of Mining and Technology, 1928;
M.S., Pennsylvania State College, 1932.

LANGEN, HERBERT J. (1947).....Professor of Secretarial Studies and Business Education; Head of the Department.
B.A., Wisconsin State College, Whitewater, 1939; M.A., State University of Iowa, 1947; Ph.D., State University of Iowa, 1954.

LARSON, EMIL LEONARD (1926).....Professor of Education
B.S., Kansas State Teachers College, 1920; M.A., Columbia University, 1923;
Ph.D., Columbia University, 1925.

LEE, JACK KENNETH (1952).....Professor of Music; Director of the University of Arizona Bands.
B.S., Ohio State University, 1943;
M.A., Ohio State University, 1947.

LEININGER, PHILLIP W. (1956).....Instructor in English
A.B., DePauw University, 1952; M.A., Columbia University, 1953.

LEONARD, JOHN W. (1953-54; 1957).....Assistant Professor of Business Administration.
B.S., University of Arizona, 1952; M.A., University of Arizona, 1955; Ph.D., Cornell University, 1958.

LETSON, ROBERT JUSTIN (1956).....Assistant Professor of Education
B.S., University of Missouri, 1949; M.Ed., University of Missouri, 1950; E..D., University of Missouri, 1956.

LIM, LOUISE CHIN (1948).....Assistant Professor of Mathematics
A.B., University of California, 1943; M.A., University of California, 1944; Ph.D. University of California, 1948.

LONGONI, ROBERT A. (1959).....Instructor in English
B.A., Saint Edwards, 1957; M.A., University of Notre Dame, 1959.

LOTZENHISER, GEORGE WILLIAM (1948).....Associate Professor of Music
B.Ed., Eastern Washington College, 1946; B.A., Eastern Washington College, 1947; M.Mus., University of Michigan, 1948; Ed.D., University of Oregon, 1956.

LUZ, BABETTE (1939).....Instructor in German
B.A., University of Arizona, 1939;
M.A., University of Arizona, 1951.

MACKABEN, EUGENE HENRY (1959).....Instructor in Art
B.A., Art Institute of Chicago School of Art, 1953;
M.A., University of Arizona, 1959.

MAGOUN, CREIGHTON F. (1959).....Assistant Professor of Education
B.S., University of Rhode Island, 1929; M.S. Yale University, 1947; Ph.D., University of Connecticut, 1954.

MANN, DEAN EDSON 1955-57; 1958).....Assistant Professor of Government
A.B., University of California, 1951; M.A., University of California, 1954; Ph.D., University of California, 1958

MARCOUX, HELIODORE AIME (1951)....Professor of Mechanical Engineering
B.S., United States Naval Academy, 1934;
M.S., Cornell University, 1944.

MARKLAND, BEN C. (1946).....Lecturer in Journalism and Speech; Director of the Radio-TV Bureau.
B.A., University of Arizona, 1946; M.A., Northwestern University, 1951; Ph.D., University of Michigan, 1955.

MARQUART, DOROTHY I. (1946).....Associate Professor of Pyschology
B.A., University of Michigan, 1940; M.A., University of Michigan, 1941; Ph.D., University of Michigan, 1946.

MARRONEY, PETER R. (1939).....Professor of Drama; Head of the Department.
B.F.A., University of Oklahoma, 1936;
M.A., State University of Iowa, 1939.

MARSHALL, ROBERT H. (1957).....Assistant Professor of Economics
A.B., Franklin and Marshall College, 1951; M.A., Ohio State University, 1952; Ph.D., Ohio State University, 1957.

MARTIN, HOLLIS K. (1957).....Instructor in Business Administration
B.S., Michigan State University, 1942;
LL.B., University of Colorado, 1948.

MCBRIDE, ROBERT GUYN (1957).....Associate Professor of Music
B.M., University of Arizona, 1933;
M.M. University of Arizona, 1935.

MCCANN, LLOYD ELLIS (1958).....Professor of Education
A.B., Nebraska State Teachers College, Peru, 1935;
A.M., Colorado State College, 1939; Ed.D., Colorado State College, 1951.

MCCULLOUGH, EDGAR J., JR. (1957).....Instructor in Geology
A.B., West Virginia University, 1953;
M.S., West Virginia University, 1955.

McNIECE, GERALD MASON (1951).....Instructor in English
B.A., University of Arizona, 1948; M.A., University of Arizona, 1949;
B.Lit., Oxford University, 1951.

MEADOW, ARNOLD (1959).....Associate Professor of Philosophy and Psychology.
B.A., Brooklyn College, 1940; M.A., University of Minnesota, 1942;
Ph.D., Harvard University, 1950.

MELSON, ELIZABETH.....Visiting Lecturer in Secretarial Studies

MERRITT, CURTIS B. (1949).....Professor of Education; Acting Dean of the College of Education.
A.B., Albion College, 1936; M.A., University of Michigan, 1946;
Ph.D., University of Michigan, 1950.

MILLER, FRANK B. (1959).....Lecturer in Education
A.B., University of Akron, 1925; M.Ed., University of Akron, 1927;
Ph.D., University of Kentucky, 1934.

MITCHELL, HENRY A. (1958).....Graduate Assistant in Zoology
B.S., South-Western Missouri State College, 1958.

MORGAN, HOWARD E. (1959).....Professor of Business Administration; Research Associate in Bureau of Business and Public Research.
B.S., University of Wisconsin, 1941;
M.B.A., University of California at Berkeley, 1951.

MUIR, A. LAURENCE (1935).....Professor of English
A.B., Oberlin College, 1929;
Ph.D., Cornell University, 1934.

MULLIGAN, RAYMOND ALEXANDER (1953).....Professor of Sociology; Acting Head of the Department.
B.S., New York University, 1937; M.A., Fordham University, 1939;
Ph.D., Indiana University, 1950.

MYERS, LOUIS A., JR. C.P.A. (1948).....Associate Professor of Accounting; Acting Head of the Department.
B.S., University of Arizona, 1943;
M.S., University of Arizona, 1950.

NEFF, RICHMOND CLARK (1952).....Professor of Civil Engineering
B.S.,Met.Eng., Purdue University, 1943; M.S.Met.Eng., Purdue University, 1948;
Ph.D., Purdue University, 1954.

NELSON, EMMIE.....Visiting Lecturer in Agricultural Education
B.S., University of Georgia, 1923;
M.S., University of Maryland, 1956.

NIELSEN, GORDON L. (1959).....Instructor in Accounting
B.S., Tulsa University, 1955.

OFFICER, JAMES EOFF (1955-56; 1957-58; 1959).....Instructor in Sociology
A.B., University of Arizona, 1950.

OPPERMANN, FREDERICK WILLIAM (1958)....Assistant Professor of German
B.A., Baylor University, 1951;
M.A., Baylor University, 1953.

OSWALD, J. GREGORY (1958).....Assistant Professor of History
B.A., University of California, 1948; M.A., Loyola University, 1950;
Ph.D., Stanford University, 1958.

PERCY, GARNET DOUGLAS (1937).....Professor of Classics; Head of the Department.
B.A., University of Toronto, 1929; M.A., University of Toronto, 1930;
Ph.D., University of California, 1935.

PITTS, LILLA BELLE.....Visiting Lecturer in Music
A.B., Ward-Belmont College; B.S., Columbia University;
Mus.D., Elon College.

RABY, WILLIAM L., CP.A. (1957).....Assistant Professor of Accounting
B.S.B.A., Northwestern University, 1949.

RAMSEY, ROBERT WADDY (1947).....Assistant Professor of English
B.A., University of Arkansas, 1935;
M.A., University of Arizona, 1949.

RHODES, J. MELVIN (1952).....Assistant Professor of Education
A.B., Juniata College, 1938; M.Ed., Pennsylvania State College, 1950;
Ph.D., University of Arizona, 1957.

RICKERT, FRANCES B. .....Visiting Lecturer in Botany
B.A., Carthage College, 1936;
M.S., Western Illinois University, 1952.

ROBERTS, LATHROP, E. (1922).....Professor Emeritus of Chemistry
S.B., University of Chicago, 1914;
Ph.D., University of Chicago, 1919.

ROBINSON, CECIL (1953).....Instructor in English
B.A., Harvard University, 1943;
M.A., Columbia University, 1949.

ROBY, FRED B. (1959).....Assistant Professor of Physical Education for Men.
B.S., State Teachers College, Slippery Rock, Pa., 1953;
M.S., University of Illinois, 1954.

ROOS, NESTER R. (1955)....Associate Professor of Business Administration
B.S.B.A., Washington University, 1948;
M.S.B.A., Washington University, 1949.

ROSENBLATT, PAUL (1958).....Instructor in English
B.A., Brooklyn College, 1949;
M.A., Brooklyn College, 1951.

ROSS, ANDREW WILSON (1947).....Professor of Civil Engineering
B.S.C.E., Purdue University, 1937;
M.S.C.E., University of Arizona, 1952.

ROWEN, ROBERT BERNARD (1959).....Instructor in Sociology
B.A., University of Wisconsin, 1948; M.A., University of Wisconsin, 1949;
M.S.S.W., University of Wisconsin, 1952.

RUDENSHIOLD, HARRY (1959).....Visiting Lecturer in Drama
B.A., University of Arizona, 1952;
M.A., University of Arizona, 1959.

RYAN, PATRICK MARTIN, JR. (1959).....Associate Professor of Drama
A.B., University of California, Berkeley, 1949; M.A., Stanford University, 1950;
Ph.D., Yale University, 1959.

SAMMARCO, ANITA KALIS (1945).....Associate Professor of Music
B.S., University of Illinois, 1933;
M.A., Columbia University, 1941.

SANDS, LILA (1924) .....Professor Emeritus of Chemistry
B.S., University of Nebraska, 1919; M.A., University of Nebraska, 1920;
Ph.D., University of Nebraska, 1924.

SCHIFFER, SYDNEY (1956).....Instructor in English
B.A., University of Michigan, 1947;
M.A., University of Michigan, 1948.

SCHMITZ, FREDERICK JOSEPH (1942).....Professor of German; Head of the Department.
A.B., University of California, 1930; M.A., University of California, 1932;
Ph.D., University of California, 1936.

SCHMUTZ, ERVIN M. (1956).....Instructor in Range Management
B.S., Utah State Agricultural College, 1939;
M.S., Utah State Agricultural College, 1941.

SCHRUBEN, LUKE M.....Visiting Lecturer in Agricultural Education
B.S., Kansas State University, 1933;
M.S., Kansas State University, 1939.

SCOTT, JAMES POWELL (1935).....Professor of Art
Graduate of Art Institute of Chicago, 1932.

SHELLEY, DEL (1953).....Lecturer
B.A., Arizona State College, Tempe, 1940;
M.A., Arizona State College, Tempe, 1950.

SHERMAN, NEIL W.....Visiting Lecturer in Education
B.A., Arizona State University, 1948;
M.A., Arizona State University, 1951.

SHOULTS, SANFORD W. (1959).....Associate Professor in Sociology
Elementary Teachers Certificate, Central Michigan Teachers College, 1926;
LL.B., Detroit College of Law, 1941.

SIGWORTH, OLIVER FREDERICK (1953).....Assistant Professor of English
A.B., University of California, 1947; M.A., University of California, 1948;
Ph.D., University of California, 1951.

SIMLEY, JOHN D. (1957).....Instructor in Mathematics
B.A., University of Arizona, 1950;
M.S., University of Arizona, 1957.

SIMLEY, OLE ANDREW (1927).....Professor of Psychology
B.A., Carleton College, 1919; M.A., Carleton College, 1920;
Ph.D., University of Wisconsin, 1931.

SMITH, CHANNING S. (1958).....Assistant in Drama
B.F.A., University of Arizona, 1958;
M.A., University of Arizona, 1959.

SMITH, DAVID WAYNE (1955).....Assistant Professor of Education
B.S., Purdue University, 1949; M.S., Indiana University, 1953;
D.Ed., Indiana University, 1955.

SMITHAM, THOMAS (1947).....Instructor in German
A.B., Harvard University, 1927;
M.A., University of Arizona, 1950.

STRICKLER, GLEN WOOD (1937).....Professor of Business Administration and Economics.
Ph.B., University of Chicago, 1922; LL.B., University of Colorado, 1931;
M.A., University of Arizona, 1948.

SYVERSON, GENEVIEVE B. (1955).....Associate Professor of Education
B.A., Northern Michigan College of Education, 1935;
M.A., Columbia University, 1938; Ph.D., University of Michigan, 1955.

TANNER, CLARA LEE (1928).....Associate Professor of Anthropology
B.A., University of Arizona, 1927;
M.A., University of Arizona, 1928.

TATE, MARTIN C. .....Visiting Lecturer in Education
A.B., Arizona State University, 1933;
M.A., Arizona State College, 1940.

TATUM, ROY A. (1955).....Assistant Professor of Physical Education for Men.
B.S., University of Missouri, 1948;
M.Ed., University of Missouri, 1949.

THOMPSON, RAYMOND HARRIS (1956)..Associate Professor of Anthropology
B.S., Tufts University, 1947; A.M., Harvard University, 1950;
Ph.D., Harvard University, 1955.

TOMA, PETER A. (1959).....Assistant Professor of Government
B.A., Franklin and Marshall, 1951; M.A., Rudgers University, 1952;
Ph.D., University of Southern California, 1958.

TREAT, MARY JO.....Visiting Lecturer in Chemistry
B.S., University of Arizona, 1941; M.S., University of Arizona, 1942;
Ph.D., Cornell University, 1951.

TRIFAN, DEONISIE (1949).....Associate Professor of Mathematics
A.B., Baldwin-Wallace College, 1937; M.A., Toledo University, 1940;
Ph.D., Brown University, 1948.

UHL, KENNETH P. (1959)....Assistant Professor of Business Administration
B.S., Brooklyn College, 1952;
Ph.D., Iowa State College, 1956.

ULRICH, RICHARD DELANO (1959).....Associate Professor of Mechanical Engineering.
B.S.M.E., Purdue University, 1954;
M.S.M.E., Purdue University, 1955.

VIALL, WILLIAM P. (Ph.D.).....Visiting Lecturer

WERTMAN, KENNETH FRANKLIN (1956).....Professor of Bacteriology; Head of the Department of Bacteriology and Medical Technology.
B.S., University of Pittsburgh, 1938; M.S., University of Pittsburgh, 1940.
Ph.D., University of Pittsburgh, 1946.

WILLIAMS, JOHN ROBERT (1955).....Associate Professor of Agricultural Education.
B.S., University of Maryland, 1943; M.S., University of Maryland, 1949.
Ph.D., Pennsylvania State University, 1953.

WILSON, ANDREW WILKINS (1950).....Associate Professor of Business Administration.
B.A., Pomona College, 1935; M.B.A., Stanford University, 1937;
D.S.S., Syracuse University, 1955.

WILSON, DAVID GEORGE (1953).....Assistant Professor of Range Management.
B.S., University of Idaho, 1947;
M.S., Agricultural and Mechanical College of Texas, 1950.

WOLOSHIN, DAVID JORDAN (1957).....Instructor in German
A.B., Tufts University, 1951;
M.A., University of Michigan, 1952.

WOOD, MARY ADELE (1935).....Associate Professor of Home Economics
B.S., University of Arizona, 1922;
M.S., University of Chicago, 1934.

WYNN, RUTH (1956).....Instructor in Physical Education for Women
A.B., Oberlin College, 1946;
M.A., State University of Iowa, 1951.

YALL, IRVING (1957).....Assistant Professor of Bacteriology
B.A., Brooklyn College, 1948; M.A., University of Missouri, 1951;
Ph.D., Purdue University, 1955.

YOSHINO, I. ROGER (1958).....Assistant Professor of Sociology
A.B., Denver University, 1944; M.A., University of Southern California, 1951;
Ph.D., University of Southern California, 1954.

YOUNG, JAMES (1960).....Assistant Professor of Business Administration
B.A., University of Akron, 1949; M.A., Ohio State University, 1954;
Ph.D., Ohio State University, 1959.

1960 SUMMER SESSION GENERAL INFORMATION - PROGRAM

OFFERINGS

The Summer Session offerings will include the 12 workshops and more than 400 courses described on pages 34-76. These offerings are designed for:

Undergraduates — to accelerate progress toward the bachelor's degree.

Teachers and other Graduate Students — to accelerate progress toward either the master's or doctor's degree, to meet certification requirements, and to acquire special knowledge and ability in professional fields.

1960 High-School Graduates — to obtain a head start on a college career; to make the "high school to college adjustment" while concentrating on only one or two subjects.

The General Public — to take advantage of the slower business and social pace of the summer months to enroll in courses for professional profit or because of personal interest.

ACADEMIC CREDIT

The Summer Session is an integral part of the University organization, with similar standards of academic accomplishment. The courses are of the same character as those offered during the regular academic year. All Summer Session credit is residence credit and is fully applicable to the appropriate University degrees.

COUNSELING, GUIDANCE, PLACEMENT, AND HEALTH SERVICE

Counseling — Throughout the Summer Session the office of each of the nine deans of undergraduate colleges and that of the Dean of the Graduate College are available for counseling concerning academic programs, and the Office of the Dean of Men and that of the Dean of Women are available for counseling concerning personal situations.

Guidance — The Student Guidance Office is available for testing and guidance service for individual students.

Placement — The University Placement Office aids students in obtaining part-time employment while enrolled, and aids students, alumni, and others in obtaining permanent positions.

Health Services — The University Department of Health offers consultation services for summer session students.

ADMISSION TO THE SUMMER SESSION

The general rules and regulations of the University relating to admission to the University for credit apply to the Summer Session.

Regular students of the University of Arizona in good standing are admitted as at any other time.

Prospective freshmen should file with the Director of Admissions a complete, official transcript of high-school credits, with a statement of graduation.

Students coming from other universities and colleges must present to the Director of Admissions evidence that they are in good standing. Those who propose to become candidates for a degree at The University of Arizona, or who wish to continue in the fall semester, must file official transcripts of record from each institution previously attended.

Graduate Students — Requirements and procedure for the admission of graduate students are discussed on page 27.

Other Students eligible to enter the University will be permitted to pursue such courses as they are qualified to carry.

Note: All new students except those of graduate standing should apply to the Director of Admissions for appropriate admission blanks. Admission to the Summer Session does not necessarily imply admission in the regular year.

Students entering the University for the first time are urged to apply for admission by June 1.

REGULATIONS

General Regulations of the University — All regulations of the University of Arizona, as set forth in the Biennial Catalogue, are in effect except in so far as modified by statements in this Announcement for the Summer Session.

Maximum Study Load — The maximum number of units for which students may register regularly for credit is 12 semester hours for the 10-week session or 6 semester hours for either 5-week term.

Minimum Standards of Scholastic Achievement — To be in good standing academically a student is required to earn cumulative grade averages, according to classes as follows:

	Cumulative grade average required to remain in good academic standing
Freshman (fewer than 25 units of work completed)	3.9000
Sophomores and First-Year Pharmacy students (from 25 through 55 units of work completed)	3.6500
Juniors and Second-Year Pharmacy students (from 56 through 86 units of work completed)	3.4000
Seniors and Third- and Fourth-Year Pharmacy students (87 or more units of work completed)	3.1500
Graduates (any student registered in the Graduate College)	2.5000 (work carried for graduate credit only)

Failure to earn the required average automatically places the student on probation, and after a review of his case by the Dean and the Scholarship Committee of the college concerned and upon approval by the Advisory Council he may be disqualified by the University. A student on probation retains that status until he earns the cumulative grade average required for good academic standing in his class. Students disqualified who register in the University after a period of ineligibility are registered on probation.

Regular unclassified students and special students are required to earn cumulative grade averages in consideration of the number of units of work completed, as indicated in the class table above.

Change of Registration — Registration may not be changed after the first week of each term except by approval of the instructor, the major professor, and the Dean concerned.

LIVING FACILITIES

HOUSING

Air-conditioned dormitory accommodations for men and women are provided on the campus. Manzanita and Mohave Halls will be used for women and Graham Hall for men. Additional halls will be opened as the need arises. Rooms are uniformly furnished with beds, mattresses, tables, dressers, chairs, and study lamps. Pillows and bed linens are provided, but students must provide their own blankets, towels, laundry bags, and other necessities. The laundering of all bed linens is cared for by the University. Students are advised to provide a warm blanket for the cooler nights.

Women students — Manzanita and Mohave Halls are the newest of the eight women's dormitories. The walls of each sleeping room are painted in a pastel color. The chairs and desks in the room are furnished in a darker, contrasting shade. Refrigerated air-conditioning, elevators, and laundry facilities are modern conveniences provided for the comfort and needs of students. Spacious, well-appointed lounges, a study room, and enclosed patios add much to the pleasure of group life.

During the Summer Session the dormitories are open to both graduate and undergraduate students. All unmarried undergraduate women not living at home are required to live in the dormitory unless an exception is made by the Dean of Women before or at registration. All dormitory arrangements for women must be approved by the Dean of Women at the time of registration and may not be changed without her permission.

Men students — Graham Hall offers excellent double-room facilities. Features of particular interest to summer session students are: refrigerated air-conditioning throughout, built-in room furniture, lounges, storage and laundry facilities. It is near classroom buildings and the Student Union Building.

Married couples — Married couples will be housed in dormitory rooms if there is sufficient demand. There are no accommodations for children.

Dormitory reservations — Accompanying the Registrar's notification that admission has been granted is an application for reservation of dormitory space. This should be filled out immediately and mailed to the Manager of Student Housing with a deposit of $10. Checks should be made

payable to the University of Arizona. This deposit is security against damage to or loss of University property, and will be returned if there are no charges against the student. *Applications for a room reservation should not be made until notice of admission is received from the Registrar.*

Only registered students may use the dormitories.

Off-campus housing — Information concerning housing facilities off the campus may be secured by visiting the Office of Student Housing. This information is not made up for mailing.

MEALS

Food Service facilities in the Student Union Memorial Building will be open for the convenience of Summer School students. Meal tickets may be purchased providing three meals a day, Monday through Friday, for two-week periods at a cost of $1.90 per day.

MAIL

The newly remodeled Student Union Post Office, located in the basement of the Student Union Memorial Building offers free mailbox service to all summer session students. Mailbox numbers may be obtained by calling at the Post Office in person. Prior to obtaining a number, students may use the address, "General Delivery, S.U.P.O., Tucson, Arizona."

EXPENSES

All fees and tuition for the term are due and payable at the time of registration for a five-week period. Since the University is not permitted to extend credit nor to accept installment payments, it is essential that all students have sufficient funds on entering to pay their immediate expenses.

SUMMARY OF FEES AND DEPOSITS FOR A FIVE-WEEK PERIOD

Dormitory (in advance)	$35.00
Dormitory Room Deposit	10.00
Tuition per unit (plus fees listed below)	11.25
Plus:	
Student Union fee, (on 3 or more units)	2.50
Library fee	1.00
Recreation fee	1.00
Tuition, Auditors only	10.00
Tuition for courses audited in addition to credit courses, per unit	5.00
Thesis or Dissertation only	5.00
Late Registration Fee	2.00
Change of Program Fee	1.00
Credit by Examination, per unit	2.00
Physical Education courses (except Theory)	2.00
Physical Education courses deposit	1.00
Other fees (See below)	

All students should add to applicable fees above, additional funds necessary for personal needs including board.

Dormitories — Rooms may be obtained at the rate of $35.00 per person for each five-week term, two in a room. When available, the charge for a room for single occupancy or for a married couple is at the rate of $55 per term. Charges for periods shorter than a full term are prorated.

A room deposit of $10.00 must accompany each application for a dormitory room. Do not send cash, since the University will not be responsible for cash deposits sent through the mail. The deposit applies as security against damage to and/or loss of University property and does not apply on the rent. Room reservation deposits will not be returned when a reservation is cancelled unless notice of such cancellation is received by the Department of Student Housing on or before the Saturday preceding registration for the related term.

Tuition — The tuition is $11.25 per semester hour of credit for either 5-week term. The NON-RESIDENT fee applicable in regular sessions does not apply to summer session students.

Student Union Fee — A fee of $2.50 per term is payable on the day of registration by each student registering for 3 or more units of credit.

Library Fee — A fee of $1.00 per term is payable by each student registering for credit.

Incidental Fee — To provide funds for recreational and social activities during the term, a fee of $1.00 is payable by each student registering for credit.

Auditor's Fee — Students registering only as auditors and not for credit pay a registration fee of $10.00 for the term; other fees do not apply. Students combining audited courses with courses for credit will pay $5.00 per unit for audited courses in addition to the tuition fee for credit courses. However, the maximum tuition fee for such combined courses may not exceed $67.50 per term unless the units for credit exceed six. Units for audited courses are considered as part of the total study load.

Thesis or Dissertation — Registration fee for thesis or dissertation only is $5.00 and other fees do not apply.

Late Registration — Each student completing registration after the formal date for same will pay an addition fee of $2.00.

Change of Program — The fee for each approved change of program will be $1.00.

Credit by Examination — A fee of $2.00 per unit is payable before the examination may be given.

Physical Education — Students registering for courses in Physical Education (except Theory) pay a locker and towel fee of $2.00 and a deposit of $1.00.

Music — For individual instruction in voice or instrumental music a fee is charged in addition to the regular tuition. The fee for two half-hour lessons a week for five weeks is $20.00, with one unit of credit. The rental fee for practice instruments is: for 1 hour per day for 5 weeks, $1.50; for 2 hours per day for 5 weeks, $2.00.

Laboratory and Materials — In certain laboratory courses fees and deposits are required to cover the cost of materials and of breakage. Statements of the amounts of such fees and deposits are found in the description of the courses.

Trips — For all field trips required in connection with courses, additional fees will be charged as stated in the description of the courses.

Refunds — Students withdrawing during the period June 13 to June 20, inclusive, in the first term, and during July 18 to July 25, inclusive, in the second term, will be refunded upon application all tuition, course, and other fees paid for the related term, less a withdrawal charge of $5.00 and the late registration fee of $2.00 if applicable. No refunds of fees or tuition will be made after the stated dates.

All deposits are refundable upon application at the end of each term or upon withdrawal, less any charges assessed for damage to and/or loss of University property (for exception see room reservation deposits under *Dormitories*).

Students moving from a dormitory before the end of a term but not withdrawing from the University will forfeit the unused portion of the term rental. Students withdrawing before the end of the term, upon application, will be refunded a prorated share of the prepaid dormitory rental.

GRADUATE STUDY AND ADVANCED DEGREES

Included in this section are matters of particular importance to graduate students registered for the Summer Session. Those who wish more complete information are referred to the Biennial Catalogue of the University or to the Graduate Catalogue.

Requirements for Admission — Admission to the Graduate College is open to persons who hold the bachelor's degree from the University of Arizona or from a college or university approved by the University of Arizona. Admission in any case is granted only after approval of the candidate's previous academic record by the Director of Admissions, the Dean of the Graduate College, and the heads of the departments in which the candidate proposes to do the greater portion of his work. An additional number of undergraduate courses may be required when previous work has not approximated the general requirements for the corresponding bachelor's degree at the University of Arizona or the special requirements for the field in which the candidate proposes to specialize; and prospective graduate students are urged to determine from the Dean of the Graduate College their status in this regard.

Admission Procedure:

1. Application forms should be submitted to the Director of Admissions. Blank forms will be sent by the Dean of the Graduate College upon request.

2. Transcripts from all colleges and universities attended should be ordered from the Registrar at these institutions and sent to the Director of Admissions. (Note: Applicants who do not propose to work for advanced degrees may be admitted on transcript showing bachelor's degree.)

3. When the applicant's previous academic record is approved, the applicant will receive an official certificate of admission from the Director of Admissions. Inquiries concerning admission applications should be directed to the Dean of the Graduate College.

4. Although students are urged to secure admission prior to the date of registration, provision is made for temporary unclassified admission.

5. All students qualified to receive graduate credit should register in the Graduate College.

General prerequisites for major and minor graduate credit — The undergraduate major, or its equivalent, in any field of study is prerequisite to major graduate work in that field. In some cases, a field of concentration in the undergraduate work different from but suitably related to the graduate major may be acceptable. The minimum requirement in education is 15 units, of which 3 may be in general psychology.

Supporting or minor courses have as a prerequisite for graduate credit a minimum of 6 units basic to the subject, including all course prerequisites stated in the description of the course.

Deficiencies in undergraduate preparation must be satisfied by the completion of prescribed courses for undergraduate credit.

Graduate credit for seniors and unclassified students — A student of senior standing who is within 16 units of completing all requirements for graduation may register for graduate work if recommended by the head of the department and approved by the Dean of the Graduate College. For such registration a petition for graduate credit in excess of senior requirements must be filed with the Dean at the time of registration, or within 10 days thereafter, for the action of the Graduate Council. This petition must be endorsed by the professor in charge of the course and the student's major professor. The Council will not approve a petition unless the senior has a grade average of 2.5 or better on all work already completed in the University; is proceeding toward graduation as directly as possible; and does not propose a total load to exceed 6 units per term.

A student who holds the bachelor's degree but who is not registered in the Graduate College may petition for permission to take courses for graduate credit. His petition must be filed within 10 days following registration, be recommended by the instructor of the course and the head of the department concerned, and be approved by the Graduate Council.

Graduate credit courses — *See page 33.*

Scholarship Requirement — No student will be recommended for the award of an advanced degree unless he has achieved a grade average of 2.0000 or higher on all course work taken for graduate credit. The grade average will be computed on all work for which the student has enrolled for graduate credit, whether or not it is offered in satisfaction of requirements for an advanced degree. The grade of 4 does not carry graduate credit but is computed with the general average.

Residence Requirements — The equivalent of two semesters of residence, involving the completion of not fewer than 24 hours of graduate credit are required for the master's degree, except as thesis work *in absentia* may be approved. The remaining six units may be either transferred from another accredited school or earned in courses offered through the Division of Continuing Education of the University of Arizona (Evening Courses); an additional six units earned in such courses given on the campus by the

University will be accepted as part of the requirements for the master's degree. In certain departments provision is made for teachers in service and others who are unable to attend the University during the regular year to complete the requirements for the master's degree by attendance at Summer Sessions only.

For the degree of Doctor of Philosophy, not fewer than six semesters of essentially full-time graduate work are required. At least two of these must be regular semesters actually spent in residence at the University of Arizona, and at least 30 units must be completed at this University.

Residence requirements for the degree of Doctor of Education are described in a subsequent section.

Completion of Requirements for Degrees — Students registering with the expectation of completing requirements for the Master of Education degree during the Summer Session should petition for admission to final examinations. Blank forms may be obtained from the Secretary of the Graduate College ten days in advance of the examination date. Usually such a petition will not be approved unless the applicant has been admitted to candidacy, has filed a satisfactory program of study, and has a grade average of 2.0 or better on course work completed. However, in cases where there is a reasonable expectation that a deficiency in the grade average can be met through completion of courses for which the applicant is currently enrolled, the Dean of the Graduate College may approve a petition for admission to the final written examination. Final oral examinations will be scheduled before the end of the term for all candidates who pass the written examinations. A candidate who fails to pass either the written or oral examination may take his examination for a second time not earlier than the next semester or next Summer Session. The result of the second examination is final.

Following completion of the oral examination, students should obtain a statement of graduation fees from the Registrar.

Submission of Theses and Dissertations — A thesis or dissertation submitted in partial fulfillment of the requirements for an advanced degree must be filed with the Dean of the Graduate College not later than one week before the final oral examination in the case of the master's degree, and not later than two weeks before the final oral examination in the case of the doctor's degree.

REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION AND FOR THE DEGREE OF DOCTOR OF EDUCATION

Since these two degrees are of particular interest during the Summer Sessions, the requirements for them are set forth in detail. For similar descriptions of requirements for other advanced degrees, including other degrees with a major in education, students are referred to the Biennial Catalogue of the University or to the Graduate Catalogue.

Requirements for the Degree of Master of Education — The degree of Master of Education will be conferred upon professional students in the field of education who have met the admission requirements of the Graduate College, and who have completed the stipulated graduate studies and

met all other requirements for the degree. All general regulations for graduate work and all requirements of the M.A. and M.S. degrees apply to this degree, except as they may be modified by the following requirements. (A thesis is not a part of the requirements for this degree.)

Course requirements — Course work required shall not be less than 32 units, including 17 to 20 units in the major subject and 12 to 15 units in the minor subject.

Supporting work — If the major is English, mathematics, or other subjects which are teaching fields in the public schools, the supporting work shall include not fewer than 12 semester hours in education. If the major is education, supporting work shall be planned with a view to the student's special interests as a teacher or administrator.

Research project — All candidates for the degree, whether the major or the minor is in Education, are required to complete a research project of a kind to warrant 3 units of credit. Students will register for Education 390 to receive credit for this project.

Note: Final written examinations for the Master of Education degree will be given on June 25 and July 30.

Requirements for the Degree of Doctor of Education — The Department of Education and the Graduate College accept prospective candidates for the degree of Doctor of Education. The degree is granted only to those who demonstrate a high degree of proficiency in Education and who present a dissertation of a professional nature.

Residence and credit requirements — The equivalent of three academic years of essentially full-time graduate study, including work toward a master's degree, is required. This must include at least one regular semester, beyond the master's degree, in residence. During this semester in residence, the student must register for at least nine semester hours of credit. The equivalent of one academic year of full-time work must be completed at this University. Graduate credit earned at approved institutions may be counted toward requirements for this degree, if accepted by the major department and the Graduate Council. The dissertation is understood to require at least one academic year of full-time work. Students must elect Ed. 420 (Dissertation) for a total of eighteen units while working on the dissertation. No more than nine of these units may be elected in any one term. Arrangements for writing the dissertation *in absentia* must be made through petition to the Committee on Graduate Study with the favorable recommendation of the department supervising the work. Requirements for the Ed.D. degree must be completed within a period of six calendar years after the qualifying examination.

Qualifying examination — For the purpose of demonstrating fitness to undertake work leading to candidacy for the doctorate, each applicant must pass a qualifying examination. It is expected that this examination will be taken after thirty hours and before forty-five hours of graduate work have been completed. The examination will be either oral or written, or both, at the discretion of the department. In addition, a personal interview, a review of the applicant's college record, and evidence of the applicant's ability to write in a scholarly manner are required. Applicants

may offer the master's thesis or an equivalent paper to the examining committee for its use in evaluating the student's ability to write in acceptable fashion.

Teaching experience — Candidates for the degree of Doctor of Education are required to furnish evidence of having successfully completed at least three years of teaching or administrative experience in the public schools.

Program of study — A program of study, recommended by the Dean of the College of Education, must be submitted for the approval of the Graduate Council at the beginning of the second year of graduate study. The student will major in education but must have a minor in a department other than education. Not less than forty-six units of work must be in education. An outline of the proposed dissertation, approved by the Dean of the College of Education, must be submitted for the approval of the Graduate Council not later than October 1 of the last year of study.

Foreign language requirement — A reading knowledge of a foreign language will be required when such knowledge is necessary for the successful completion of the dissertation.

Preliminary examination — Before admission to candidacy for the degree, a comprehensive examination must be passed. This examination shall be both written and oral and will cover work which the applicant has taken in education and in minor fields. The examination will be held toward the end of the second year of graduate work or not later than February 15 of the last year.

Advisory committee — When the student has successfully passed the qualifying examination and has outlined a tentative dissertation problem, the Dean of the Graduate College, after consultation with the Dean of the College of Education, will appoint an advisory committee. Two members from the student's major field of study and one from his minor field of study will constitute the committee. The chairman will be the student's major professor and thesis director. The duties of this committee are to review the proposed dissertation problem, to evaluate the student's program of study, to make recommendations to the Dean of the College of Education concerning the adequacy of the dissertation problem and the program of study and to be available to the student when guidance is necessary.

Advancement to candidacy — When the preliminary examination has been passed and evidence shown of ability to carry on professional studies of a high grade, the student will be recommended to the Committee on Graduate Study for acceptance as a candidate for the doctorate. These regulations must be met on or before February 15 of the academic year in which the degree is to be conferred.

Final examination — When the required standards of scholarship have been met and the required ability in research has been shown, the candidate shall submit to an oral examination in defense of his dissertation, as well as to any general questioning related to the field of study which may develop therefrom. This examination shall be conducted before

a committee appointed by the Dean of the Graduate College upon consultation with the Dean of the College of Education, the exact time and place to be announced at least one week in advance, and shall be open to the public.

Dissertation — Two weeks prior to the final examination, one copy of the dissertation must be submitted to the Committee on Graduate Study. Two copies of the completed dissertation, approved and accepted by the major department, must be filed with the Dean of the Graduate College, following the final examination, and a library binding fee of $5 must be paid to the University Comptroller. At the same time, there must be filed two copies of an abstract of the dissertation approved by the Dean of the College of Education and the Dean of the Graduate College.

Publication of dissertation — Dissertations are published by University Microfilms, Ann Arbor, Michigan, and a fee of $25 is charged to cover this expense. Upon certification by the student's major professor, members of the committee for his final examination, and the Dean of the Graduate College, the typed first copy and an abstract of 700 words or less are forwarded to the University Microfilms. The manuscript is microfilmed, the negative inspected, and put in vault storage. The manuscript is catalogued and this information is sent to the Library of Congress for printing and distribution of cards to depository catalogues and libraries. An abstract is printed in the forthcoming issue of Microfilm Abstracts and distributed to leading libraries here and abroad, and to a selected list of journals and abstracting services. The first copy with one positive microfilm is then returned to the University Library.

Publication by microfilm does not preclude publication by other methods later, and successful candidates are urged to submit dissertation material for publication in a journal of its field. Suitable acknowledgement must always indicate the publication to be a dissertation, or portion of a dissertation, submitted in partial fulfillment of the requirements for the degree of Doctor of Education at the University of Arizona.

TEACHING AND ADMINISTRATIVE CERTIFICATES

TEACHING CERTIFICATES — *Secondary certificates* are granted to the holders of the bachelor's degree from an accredited university or college authorized to prepare secondary-school teachers who present, in addition, evidence of the satisfactory completion of not less than 30 semester hours of graduate work at the University of Arizona or at other accredited institutions.

Pre-secondary certificates entitle the holders to qualify for the regular secondary certificate by in-service preparation while they are teaching. Such certificates have a preliminary requirement of 6 semester hours of graduate work.

Elementary certificates are granted to holders of the bachelor's degree from an accredited university or other teacher-preparation institution authorized to prepare elementary teachers.

Elementary and secondary certificates are valid for 4 years. They are renewable any number of times for periods of 6 years, upon presentation of evidence that the holder has, during the life of the certificate,

completed 4 years of successful teaching and has carried to completion satisfactorily 5 semester hours of approved professional work at an accredited school or 10 semester hours when the teaching experience has been deficient. For the initial renewal 2 years' teaching and 5 semester hours are required.

ADMINISTRATIVE CERTIFICATE — The administration certificate is granted upon evidence of at least three years of successful teaching experience in the public schools, eligibility for an elementary or a scondary certificate, and a master's degree with a minimum of 15 semester hours in education taken subsequent to the bachelor's degree, including the courses listed below:

School Administration
Supervision of Instruction
Statistical Methods of Education
Curriculum Determination and Construction
Arizona School System, Laws and Records
School Finance
Schoolhouse Planning and Maintenance
History or Philosophy of Education

The certificate is required of any administrator in charge of a school or school system with five or more teachers, or a supervisor of non-special instruction.

A GENERAL REQUIREMENT — All persons applying for certificates authorizing them to become superintendents (or principals) or teachers in the public schools and junior colleges in Arizona must, in addition to existing requirements, take a course in the provisions and principles of the Constitution of the United States and of this state. Candidates for certificates may satisfy this requirement by taking the course Political Science 100, or the courses Political Science 51a and 51b (or 101-C).

APPLICATION FOR CERTIFICATES — Certificates for teachers and school administrators are not granted automatically; formal application must be made. As considerable time is sometimes required to secure the necessary data, candidates should file the application early in the term in which they expect to qualify. Necessary blanks and detailed information relating to teaching and administrative certificates may be secured at the office of the Dean of the College of Education.

KEY TO SYMBOLS

KEY — The terms in which the courses are offered are indicated by Roman numerals: First Term by I; Second Term by II; either term by I, II; continued courses by I-II. The numerals in parentheses indicate the number of units. Courses numbered 1 to 99 inclusive are primarily lower-division courses for freshmen and sophomores. Courses numbered 100-199 inclusive are upper-division courses primarily for juniors and seniors. Courses numbered 200-299 inclusive are upper-division courses primarily for juniors and seniors, but courses in this group may be carried for graduate credit, subject to approval by the instructor, the head of the department, and the Dean of the Graduate College; they are not open to lower-division students. Courses numbered 300-399 are primarily for graduate

students, but may be taken by qualified seniors. Courses numbered 400 and above are exclusively for graduate students.

RESEARCH AND THESIS — Opportunity for research and thesis work for graduate students will be available in practically all departments. However, if the department in question does not indicate this availability, persons interested are advised to direct a specific inquiry to the Dean of the Summer Session.

NOTES

SPECIAL PROGRAMS BEGINNING JUNE 2, 6, 13, 17, 27, 30, JULY 18, AND AUGUST 15.

June 2 — Mine Surveying.

June 6 — Range Field Studies.

June 13 — Basic Evaluation Adapted to Extension Teaching, Principles in the Development of Youth Programs, Administration of the County Extension Service, Teaching Agricultural Practices, Elementary Science Workshop, Field Geology, Conference on Techniques in Clothing Construction, Landscape Management, Seminar in Junior High-School Vocal Music, Seminar in High-School Instrumental Music, Seminar in Beginning String Instruction, Physical Fitness for Children and Youth, Business Education Workshop, Speech Correction Workshop.

June 17 — Field Course in Archaeology, Advanced Field Course in Archaeology.

June 27 — Humanities Study Tour, Seminar in Elementary Music Education, General Music Education Workshop.

June 30 — Visual Materials for Teaching Agriculture, Principles of Range Management.

July 18 — Aviation Education Workshop, Workshop on Education of Migrant Children, Education Workshop on Counseling and Rehabilitation of Handicapped Children and Adults.

August 15 — Conference on Communications in the Profession.

SPECIAL PROBLEMS — Under the number 299, any department with the approval of the head of the department and of the Dean of the Summer Session, may offer programs of guided independent study for individual students.

CREDIT BY EXAMINATION — In certain situations extension credit for courses listed in the General Catalogue of the University is given when the department concerned, on the basis of the results of an examination, is satisfied that both content and method have been adequately mastered. Details are given in the General Catalogue.

WITHDRAWAL OF OFFERINGS — While it is expected that all listed courses and workshops will be offered as indicated, the Summer Session Committee necessarily reserves the right to make changes for emergency reasons.

THE MALL, OLD MAIN, AND STUDENT UNION MEMORIAL BUILDING

1960 SUMMER SESSION

ACCOUNTING

Professors Bogart, Howard
Associate Professor Myers, (Acting Head of Department)
Assistant Professors Foltz, Raby
Instructor Nielsen

1a-1b. Principles of Accounting (3 - 3) I, II

Development of fundamental concepts and procedures; form and content of basic financial statements; accounting for owners' equity in sole proprietorships, partnerships, and corporations; basic manufacturing and cost accounting; analysis and use of accounting data by management and other interested parties. Fee, $.50 each term.

1st term:	1a	9:00 - 10:40	Myers
2nd term:	1a	9:00 - 10:40	Nielsen
	1b	9:00 - 10:40	Foltz

2. Principles of Accounting - Practice (2) II Nielsen

Practical applications of accounting concepts; special recording techniques; practice sets. Required of all students majoring in accounting. P, 1b or CR therein. Fee, $ .50. 10:50 - 11:50 MWF only; Lab. 1:30 - 4:30 MWF only.

101a-101b. Intermediate Accounting (3 - 3) I - II Howard, Raby

Basic processes and concepts of accounting; form and content of income statements and balance sheets; accounting for stockholders' equity; theory and problems involved in accounting for assets and liabilities; income determination; analysis and interpretation of financial statements. P, 1b and 2 or CR in the latter. 9:00 - 10:40.

111. Cost Accounting (3) II Foltz

Basic concepts and procedures involved in accounting for raw materials, direct labor and manufacturing overhead in job order and process cost accounting systems; introduction to standard cost procedures. P, 1b. 10:50 - 12:30.

201. Advanced Accounting (3) I Myers
Partnerships; joint ventures; special problems of consignments, installment sales, and insurance; insolvent concerns; estates and trusts. P, 1b. 1:30 - 3:10.

221. Income Tax Procedure (3) I Bogart
Interpretation of income tax laws, rules and regulations of the United States and the State of Arizona with particular emphasis on fundamentals of the tax laws and procedures applicable to individual returns. P, 1b. 10:50 - 12:30.

251. Survey of Accounting (3) I Bogart
Primarily for students desiring a general knowledge of the field of accounting. Concepts and mechanisms of accounting; emphasis on the uses of accounting as a means of managerial control in industrial enterprises. Not open to students for whom Accounting 1a - 1b is required. 9:00 - 10:40.

AGRICULTURAL EDUCATION

Professors Cline (Head of Department), Boone
Associate Professor Williams
Visiting Lecturers Nelson, Schruben

121s. Directed Experience in Teaching Agriculture (3) II Cline, Williams
Study, observation, and participation in the activities of a teacher of vocational agriculture under the direction of a supervising teacher for three weeks. Readings, conferences, and written reports. P, Education 209. Hours to be arranged.

211s. Visual Materials for Teaching Agriculture (2) I Cline, Williams
Sources, selection, preparation, and use of pictures, films, charts, specimens, models, and real materials for teaching agriculture in the classroom or at public gatherings, on television, in the shop, and on the farm or ranch. P, 189 or equivalent. Fee, $3. 9:00 - 12:35 (1½ hour lecture and 1½ hour lab.). (June 30 - July 16.)

222s. Basic Evaluation Adapted to Extension Teaching (2) 1 Boone
Evaluation and clarification of program objectives. Techniques that extension workers can use in the collection, analysis, and interpretation of data for program planning. Course content is planned to give the student a broad concept of program analysis and systematic methods of appraising educational outcomes. P, senior or graduate standing an 16 credits in agriculture or home economics. 10:55 - 1:20. (June 13 - 29.)

224s. Principles in the Development of Youth Programs (2) I Nelson
Philosophy, objectives, and organization of youth programs. Emphasis will be given to the needs of young people and motivation of the individual, program development and execution, and recruiting and training local leaders. The place of extension youth programs in relation to school and other educational groups will be considered. P, senior or graduate standing with 16 credits in agriculture or home economics. 10:55 - 1:20. (June 13 - 29.)

302s. Administration of the County Extension Service (2) I Schruben
Principles, policies, and procedures of administration as they relate to the Cooperative Extension Service. The organization and administration of the Extension program at county, state, and federal levels. Relations with other divisions of the Land-Grant college system, channels of communication within the Extension Service, and delegation of responsibility and authority. P, senior or graduate standing with 16 credits in agriculture or home economics. 8:20 - 10:45. (June 13 - 29.)

315. Investigations and Studies in Agricultural Education (2) I Cline
A study of research procedure and a review of the findings of studies. Selecting a problem, planning and completing a study. P, 6 units of graduate study in student's major field including 2 units in agricultural education. 7:00 - 8:10.

391s. Teaching Practices (2) I Williams
New developments and practices in selected farm and ranch enterprises for the use in teaching agriculture. Study, discussion, demonstrations, and practice on the organization and use of subject matter. P, 189 or equivalent. Fee, $3. 8:50 - 11:15. (June 13 - 29.)

299. Special Problems (1 to 5) I, II Staff
Hours to be arranged.

400. Research (1 to 4) I Staff
Hours to be arranged.

ANTHROPOLOGY

Professor Haury (Head of Department)
Associate Professors Getty, Tanner, Thompson
Instructor Officer

1a-1b. Introduction to Anthropology (3 - 3) I - II — Tanner, Getty

Survey of physical anthropology, archaelogy, linguistics, and cultural anthropology; major theories, problems, and results. 1a is not prerequisite to 1b. 9:00 - 10:40.

180s. Field Course in Archaeology (6) I - II — Haury, Thompson

Open to undergraduates who have had introductory courses in anthropology. Enrollment limited. For detailed information write to Dr. Emil W. Haury, Department of Anthropology. (June 17 - August 12.)

222. Sociology of Minority Relations (3) I — Yoshino

A critical approach to the social processes involved in minority relations in terms of race, caste, class, ethnicity, politics, and religion. The sources of minority attitudes; patterns of minority and adjustment; trends in minority relations. P. 1 and 2, or 6 units of anthropology. 10:50 - 12:30. (Identical with Sociology 222.)

234as-234bs. Indians of the Southwest (3 - 3) I - II — Tanner, Getty

A consideration of the history, arts and crafts, economic and social institutions, religion, and mythology of the present-day Indians of the Southwest. This course may not be substituted for any required course in the major in Anthropology. Credit will not be allowed for both 234as-234bs and 230a-230b. P, upper-division standing and consent of the instructor. P, for graduate credit, 12 units in anthropology or education. 10:50 - 12:30.

279. Culture and the Individual (3) I — Officer

A survey of the field of culture and personality and the processes through which the individual acquires culture. P, 276 or equivalent. 9:00 - 10:40. (Identical with Sociology 279.)

320s. Advanced Field Course in Archaeology (6) I - II — Haury, Thompson

Advanced problems in field techniques and interpretation. Students will be expected to undertake independent research. Open to students of graduate standing who have had 180s or an equivalent field course. Enrollment limited. For detailed information write to Dr. Emil W. Haury, Department of Anthropology. (June 17 - August 12.)

ART

Associate Professor Hurlbutt
Assistant Professors Denniston, Grossman
Instructor Mackaben

6a. Drawing (2) II — Denniston

Elementary course in representational drawing and expressive pictorial design. Co-requisite, 4a - 4b. Fee, $2. 9:00 - 12:00.

45a. Figure Drawing I (2) II — Denniston

An introduction to the drawing of the human figure with attention to structural and topographic anatomy. P, 6b, Fee, $10. 9:00 - 12:00.

55ab. Painting I (2) I, II — Staff - Denniston

Elementary course in pictorial organization and in methods and techniques of oil painting. P, 6b. Fee, $1 each term. 7:00 - 10:00.

102. Art in the Lower Elementary Grades (3) I — Mackaben

Art education in relation to the needs, growth, and developmental patterns of children. An introduction to a variety of art media through active studio participation. Fee, $1. 9:00 - 10:40.

103. Art in the Upper Elementary Grades (3) II — Mackaben

A continuation of 102. Fee, $1. 9:00 - 10:40.

210a. Nineteenth and Twentieth-Century Painting (3) I — Staff
Analytical and appreciative study of the nineteenth-century movements and schools in France. P, 6 units of history or art history. 10:50 - 12:30.

228. Principles of Esthetics (3) I — Hurlbutt
The nature and value of the arts; principles and media of expression. P, 6 units in philosophy other than 12a - 12b, or 6 upper - division units in the history of art. 9:00 - 10:40. (Identical with Philosophy 228.)

240b. Crafts (2) II — Grossman
A practical acquaintance with the design and technical essentials of the various craft media. Metal (including silver), jewelry, enamel on metal. P, 50b. Fee, $8. 9:00 - 12:00.

242a,b,c,d. Ceramics (2) II — Grossman
An introduction to ceramic materials, construction design, glazing, and firing. Laboratory experience in building pottery by hand and potter's wheel. P, 50b. Fee, $8. 9:30 - 12:30.

243a,b. Sculpture (2) II — Grossman
Study of plastic form; exploration of various techniques including modeling, casting, carving, and metal construction. P, 50b. Fee, $10. 9:30 - 12:30.

245a,b. Figure Drawing II (2) II — Denniston
Study of the human figure from the model and from the work of the masters; emphasis on anatomical sequence and composition. P, 45b. Fee, $10. 9:30 - 12:30.

255a,b,c,d. Painting II (2) I, II — Staff, Denniston
Study of materials and composition in relation to the painter's problems. Choice of exploration and specialization in water color, gouache, tempera, casein, encaustic, mixed techniques, and mural painting. P, 6b. Fee, $3 each term. 9:00 - 11:20.

280a,b,c,d. Painting III (2) I, II — Staff, Denniston
Advanced problems in painting. P, 55b or 255b. Fee, $10 each term. 7:40 - 10:40.

302a,b. Organization of Elementary - School Art Materials (3) I, II — Mackaben
Problems related to the elementary teacher's art education needs in the classroom situation. In-service training in program planning, material use, and evaluation of child art at a specific level. P, Art 102, 103. Fee, $2 each term. 10:50 - 12:30.

299. Special Problems (1 to 5) I, II — Staff
Hours to be arranged.

340. Problems in Art (2 to 4) I, II — Staff
Hours to be arranged.

400. Research (1 to 4) I, II — Staff
Hours to be arranged.

410. Thesis (3 to 6) I, II — Staff
Hours to be arranged.

BACTERIOLOGY

Professor Wertman (Head of Department)
Assistant Professor Yall

1a-1b Microbiology (4 - 4) I - II — Yall, Wertman
A study of microbes and the part they play in everyday life. The fundamental principles of microbiology are considered against a background of broad biological concepts. Fee, $10 each term. (Does not apply on the major in bacteriology.) 7:30 - 8:40; Lab. 9:00 - 12:00. (Class meets twice daily.)

BOTANY

Instructor Ellis
Visiting Lecturer Rickert

1. General Botany (4) I — Rickert
An introduction to the structure, function, and development of the flowering seed plant. Fee, $4. 9:00 - 10:40; Lab. 1:30 - 4:30 MWTh.

2. Survey of the Plant Kingdom (4) II — Ellis
A study of plant groups with emphasis upon life history, relationships, and economic values. Fee, $4 (1 not a prerequisite.) 9:00 - 10:40; Lab. 1:30 - 4:30 MWTh.

214s. Plants of the Desert (2) II — Ellis
A course designed to fill the needs of public - school teachers and others who wish to become familiar with the common native and cultivated plants of the desert region. Techniques for the naming and identification of plants will be considered. Open for graduate credit to teachers who have as a prerequisite 8 semester hours of science. P, 8 units of science. P, for graduate credit, 8 units of science and 12 units of education. Field trip fee, $5. 7:30 - 8:40. Field trips to be arranged.

236s. Plants Useful to Man (2) I — Rickert
A lecture - demonstration course for teachers and others desiring information on various plants and their uses. Subjects discussed will include: foods and food plants, medicinal plants, plants and industry, plants used in textiles, and other manufactures. P, 8 units of science. P, for graduate credit, 8 units of science and 12 units of education. 7:30 - 8:40.

BUSINESS ADMINISTRATION

Professors Brown, Hudson, Morgan, Strickler
Associate Professors Denton, Roos, Wilson
Assistant Professors Haimann, Hecht, Huntley, Leonard, Uhl
Instructors Cordell, DeLucia, Martin
Visiting Lecturer Chace

6. Introduction to Business (2) II — Martin
A survey of the fundamental characteristics and functions of modern business, with emphasis on career opportunities and selection of students' upper - division courses. 7:30 - 8:40.

7. Introduction to Business (3) I — Staff
A survey of the fundamental characteristics and functions of modern business, with emphasis on career opportunities and selection of students' upper - division courses. Students not in the College of Business and Public Administration will register in B.A. 7 for 3 units. 7:00 - 8:40.

11. Economic Geography (3) I — Wilson
Geographic fundamentals; distribution and use of the world's raw materials; the relationship between changes in world geography and current economic problems. 10:50 - 12:30.

14. Geography for Teachers (2) II — Hecht
A survey of geographic principles and basic descriptive materials of use to elementary school teachers. May not be substituted for B.A. 11. 10:50 - 12:00.

43. Real Estate Investments (2) II — Denton
Survey of the legal and economic characteristics of real estate investments. 10:50 - 12:00.

69. Applications of Mathematics in Business (3) I, II — Huntley - Uhl
A survey of the principal topics in business operations involving mathematical applications or analytical methods derived from elementary mathematics. P, Math. 11 or 20. 10:50 - 12:30.

80. Fundamentals of Real Estate (3) II — Denton
Basic principles of real estate with elementary discussions of title and transfer, value, liens, financing, taxes, and zoning of real estate. Not open to freshmen. 9:00 - 10:40.

151. Insurance Principles and Practices (3) I — Roos

Principles and practices of various kinds of insurance, including life, property, casualty, and suretyship. Intended for those seeking a general knowledge of insurance. 10:50 - 12:30.

155. Statistical Methods in Economics and Business (3) I — Huntley

Methods of collecting, presenting, analyzing, and interpreting numerical data with special emphasis on time series. P, Math. 11 or 20, and either B.A. 69 or 3 additional units of mathematics. Fee, $1. 9:00 - 10:40. (Identical with Econ. 155.) (During 1959 - 61, students entering the University prior to Fall 1959 will take B.A. 255.)

201. Personal Management (3) II — DeLucia

Policies and practices in personnel management. Provides a point of view together with principles and techniques applicable to personnel problems. Problems arising in employment relationships and workable solutions. P, Econ. 1b or 2b. 9:00 - 10:40.

203. Wage and Salary Administration (3) I — Leonard

Policies and procedures effective in administration of wages and salaries, wage levels, wage structures, individual wage determination, methods of wage payment, fringe benefits, control of wages and salaries. P, 201. 1:30 - 3:10.

213. Geography of the United States and Canada (3) I — Wilson

The distribution by geographic regions of the resources of land and minerals. The relation of these to man and his economic activities. Contrasts in regional landscapes. 1:30 - 3:10.

216. Political Geography (3) II — Hecht

The kind and degree of political control over territory and its relationship to distributional patterns of human and natural geographic elements. Primary consideration given national sovereign states including analysis of geographic aspects of national power. 1:30 - 3:10.

220a-220b. Business Law (3 - 3) I - II — Martin - Strickler

220a. Introduction to sources of commercial law, with emphasis on contracts, property rights and remedies. 220b: Negotiable instruments, credit instruments and sales; law of the business unit, agency, partnerships and corporations. P, Acctg. 1b, Econ. 1b or 2b. Not open to students who have completed 6 or more units of law. 7:00 - 8:40.

241. Business Finance (3) II — Martin

Financial problems involved in the organization and conduct of a business. P, Acctg. 1b, Econ. 1b or 2b. 1:30 - 3:10.

255. Statistical Methods in Economics and Business (4) I — Cordell

Introduction to methods of collection, presentation, analysis, and interpretation of business and economic data, including simple correlation and sampling. P, Math. 11, 20, or 69a. Fee, $1. 9:00 - 10:05 and 10:15 - 11:25. (In 1960, B.A. 255 will be replaced by B.A. 155.)

257. Property Insurance (3) I — Roos

Designed for those students of insurance who desire to concentrate their study of insurance in the property field. P, 151. 9:00 - 10:40.

272. Principles of Management (3) I — Brown

Analysis of underlying principles of sound organization and management in business enterprises. P, Acctg. 1b, Econ. 1b or 2b. 1:30 - 3:10.

302. Employer-Employee Relations (3) I — Leonard

A study of the employee - relations function in industry. The relationship of the employee-relations function to the overall purposes of industrial organizations. The nature, purpose, and techniques of major components of the employee-relations function. 10:50 - 12:30.

355. Research Methods in Business (3) II — Morgan

Inquiry into objectives and methods of business research; study of contemporary research projects in business; the organization of industrial research in a business enterprise. P, 155 and graduate standing. 7:00 - 8:40.

371. Business Policies (3) I — Haimann

A course using the case method which deals with problems and policies facing top management. P, 272. 9:00 - 10:40.

373. Management Problems (2) I — Brown

A course dealing with top management problems and suggested solutions. P, 272. 10:50 - 12:00.

393. Business Investigation and Reports (2) I — Hudson

Methods of locating, classifying, and evaluating information; form and mechanics of writing a thesis on the findings. The thesis must be typed and bound in accordance with manual published by University of Arizona Bookstore. Open to seniors graduating within two semesters. 1:30 - 2:40.

399. Research in Real Estate (3) I — Chace

10:50 - 12:30.

399. Seminar (2 to 4) I — Haimann

1:30 - 2:35 and 2:45 - 3.55.

CHEMISTRY

Professor Roberts, Sands
Visiting Lecturer Treat

2a-2b. Fundamentals of Chemistry (4 - 4) I - II — Treat

Instruction in lecture and laboratory which will provide the preparation for further work in the chemistry department. P. for 2a, Math. 11 or its equivalent. Fee, $10 each term. 7:40 - 9:10; Lab. 9:20 - 12:20 MWF.

140a-140b. General Organic Chemistry (4 - 4) I - II — Roberts - Sands

General principles of organic chemistry accompanied by laboratory preparation of organic compounds. P, 2b or 5. Fee, $10 each term. 7:40 - 9:10; Lab. 9.20 - 12:20 MWF.

CIVIL ENGINEERING

Professor Hall, Neff, Ross
Assistant Professor Kriegh

5. Analytical Mechanics (5) I, II — Neff, Kreigh

Statics and dynamics of particles and rigid bodies including: kinematics, equations of motion, work and energy, and impulse and momentum. The use of vector algebra as a solution and analytical tool is emphasized. P, Math. 79b or CR, N.A. 11, one entrance unit in Physics, or Phy. 5. 7:00 - 8:40 and 1:30 - 5:00 M - F.

6. Mechanics of Materials (3) I, II

Relationships between external forces acting on elastic bodies and the stresses and deformations produced; axial, compression, tension, torsion, flexural, and combination loadings on members. P, 2 or 5, Math 79b.

1st term:	Section A	7:00 - 8:40 M-F 7:00 - 8:00 S	Hall
	Section B	9:00 - 10:40 M-F 7:00 - 8:00 S	Staff
2nd term:	Section A	7:00 - 8:40 M-F 7:00 - 8:00 S	Ross

130. Structural Analysis (3) I — Hall

Algebraic and graphical methods of stress analysis of beams, trusses, and bents subjected to static and moving loads. Introduction to statically indeterminate structures. P, 6. 9:00 - 10:40 MWF; Lab. 1:30 - 5:00 M - F. $2 plus special fee $15.

131. Statically Indeterminate Structures (3) II — Ross

Determination of the reactions and deflections of statically indeterminate beams, frames, and trusses and the construction of their shear, moment, and thrust diagrams by classical and modern methods. P, 130. 10:50 - 12:20 M - F; 7:30 - 8:50 S. Special fee $15.

140. Soil Mechanics (2) I — Staff

The chemical and physical properties of soil as an engineering material. P, 6, Chem. 2b, and Math. 180. 7:30 - 8:40.

180. Engineering Materials (2) I — Staff

Laboratory studies of the mechanical properties of soils, concrete, concrete aggregates, steel, and other metals as engineering materials. P, 140 or CR, Phy. 130a, and Chem. 2b. Fee, $8. 1:30 - 5:00.

CLASSICS

Instructor Gross

15a-15b. The Study of English Words (2 - 2) I — Gross

Designed to assist the student to increase his command of modern English. Derivations, especially from Greek and Latin, changes in the meanings of words, vocabulary building. 15a is not prerequisite to 15b.

a 9:00 - 10:10.
b 10:50 - 12:00.

DRAMA

Professor Marroney (Head of Department)
Associate Professor Ryan
Instructor Jaffe
Laboratory Assistant Smith
Visiting Lecturer Rudenshiold
Graduate Assistant Emerick

5. Voice and Diction (2) I, II — Jaffe, Emerick

Training the speaking voice and cultivation of its effectiveness, including articulation, pronunciation, and vocabulary. Fee, $1.50. 9:00 - 10:10. (Identical with Speech 5.)

20. Stagecraft (4) I — Smith

Technical organization, scenery construction, mounting, shifting, and basic drafting; construction of properties and fundamentals in set decor; opportunity for experience in productions. 8:00 - 9:00; Lab. 9:20 - 12:30.

21. Stage Lighting (4) II — Rudenshiold

Theory and physics of lighting, theory of color, lighting design, switchboard operation, instrument control, electric and sound systems; opportunity for experience in productions. 8:00 - 9:00; Lab. 9:20 - 12:30.

255s. Theatre Workshop (2 - 6) I, II — Marroney, Smith

This course will cover multiple assignments on play production activities, providing the student with varied and practical experience in the arts and crafts of the theatre. A series of 2 to 4 summer productions of plays involved. P, 12 units in drama. 9:30 - 12:00; Lab. 1:00 daily. (May be repeated for a max. of 12 units.)

300. Introduction to Graduate Study of Drama (1) I — Ryan

The study of and methods used in compiling bibliography, assembling research material, and choosing topics and themes for thesis. Required of all graduates in drama. 7:40 - 8:40.

340a-340b. Play Analysis and Criticism (3 - 3) I - II — Ryan

A survey of dramatic structure and trends; theories of dramatic criticism, important critics, and examples of criticism, research and prepared papers applying the aspects of play analysis and criticism. 9:00 - 10:40.

355a-355b. Problems of the Production Director (3 - 3) I - II — Marroney

The adptation of directional philosophies; setting up production policies; analysis of copyright, royalty, and equity laws; producing original and experimental drama. P, 20, 21 or 111a - 111b, 155a - 155b. 10:50 - 12:30.

ECONOMICS

Professor Hudson (Head of Department)
Assistant Professors Boland, Herber, Marshall, Young
Instructor DeLucia

1a-1b. Introduction to Economics (3 - 3) I, II

1a: A study of economic principles. 1b: The application of methods of reasoning and principles to the actual problems of economic life.

1st term:	1a	7:00 - 8:40	Marshall
2nd term:	1a	9:00 - 10:40	Herber
	1b	7:00 - 8:40	DeLucia

2a-2b. Principles of Economics (3 - 3) I, II — Boland - Young

2a: Nature and methods of economic analysis, basic economic concepts, production, capitalistic methods, law of diminishing returns, diminishing returns and cost, diminishing returns and population problems, risks and speculation, money exchange, banking, value of money, foreign exchange, international balance of payments, cyclical fluctuations.
2b: Value and price, competition and imperfect competition, distribution, alternative forms of distribution, public finance, and taxation. For majors in economics or business administration. P, sophomore standing. Not open to those with credit in 1a - 1b. 7:00 - 8:40.

205. Labor Problems and Trade Unionism (3) II — Young

The labor movement, problems and risks of wage-earners in modern economic society, structural and functional types of unions, union policies and practices, unions and the law. P, 1b or 2b. 9:00 - 10:40.

245. Public Finance (3) I — Boland

Public expenditures; taxation; public debt. P, 1b or 2b. 9:00 - 10:40.

248. Money and Banking (3) I — Marshall

A comparison of various standards of value; the nature of money and credit; the essential functions of commercial banks and the Federal Reserve system; foreign exchange; and the Monetary Fund and International Bank. P, 1b or 2b. 10:50 - 12:30.

291. Intermediate Economic Theory (3) II — Herber

Value and distribution. P, 1b or 2b. 10:50 - 12:30.

308. Managerial Economics (3) I — Hudson

The application of economic theory to problems of business management. P, 155, 291, and graduate standing. 7:00 - 8:40.

392. Economic Investigations and Reports (2) I — Hudson

Methods of locating, classifying, and evaluating information; preparation, form, and mechanics of writing a thesis on the findings. The thesis must be typed and bound in accordance with manual published by the University of Arizona Bookstore. Open to seniors graduating within two semesters. 1:30 - 2:40.

EDUCATION

Professors Merritt (Acting Dean of the College), Garretson, Langen, Larson, McCann, Muir
Associate Professors Danielson, Gavlak, Hunt, Syverson
Assistant Professors Bell, Blecha, Calmes, Chambers, Crowder, Haberland, Harris, Klein, Letson, Magoun, Rhodes, Smith
Instructor Hambenne
Visiting Lecturers Asmus, Carson, Ganoung, Gustafson, Hall, Haines, Kelly, Sherman, Tate, Viall
Lecturer Heath, Markland, Miller, Shelley

151. Educational Psychology (3) I, II

The application of psychology to the school situation with emphasis on learning and human development.

1st term:	Section A	9:00 - 10:40	Harris
	Section B	1:30 - 3:10	Calmes
2nd term:	Section A	7:00 - 8:40	Harris

200s. Education Workshop on Counseling and Rehabilitation of Handicapped Children and Adults (3) II Smith

A course designed to acquaint counselors with problems of physically disabled individuals. The role to be played by the school counselor, teacher, school nurse, and agency personnel for the rehabilitated handicapped will be considered. Study will be made of pre-vocational evaluation techniques. Counseling techniques to be used with disabled individuals will be presented. 9:00 - 12:00 (July 18 - August 5.)

203. Introduction to the Study of Exceptional Children (3) II Kelly

The fundamentals of special education for the classroom teacher. An overview of the incidence, characteristics, and problems of various types of exceptional children. 9:00 - 10:40.

204. Methods of Teaching the Mentally Retarded (3) II Kelly

Organization of instructional materials and acutal construction of plans for teaching mentally - limited children. Basic theories and techniques of teaching the retarded child will be discussed, evaluated, and applied. P, 151 and 203. 1:30 - 3:10.

212. History of Education in the United States (3) II Gustafson

The development of our educational system from colonial foundations to the present. 9:00 - 10:40.

217. Visual and Auditory Aids in Teaching (3) I, II Shelley, Klein

Use and management of motion pictures, stereoscopes, slides, charts, radio programs, blackboard techniques; actual instruction in the use of equipment. P, 151, 221, 225, 226, 227, or 234 recommended. 7:00 - 8:40. (Fee $10.)

220. The Teaching of Foreign Languages in the Elementary School (3) I Chambers

History of foreign language instruction in the elementary school. The place of foreign languages in the elementary - school curriculum. Determination of corpus, design of syllabus, and plan of presentation for an elementary - school course in a foreign language. Discussion and demonstration of a monolingual method. Introduction of reading and writing, visual aids, laboratory techniques, sources of cultural information and bibliography. 7:00 - 8:40.

221. The Elementary School Curriculum (3) I Tate

A study of the purpose, organization, materials, and content of the curriculum of the modern elementary school. P, 151 or CR. 1:30 - 3:10.

223s. Elementary Science Workshop (3) I Blecha

This workshop will feature scientific topics, problems, and experiments for elementary teachers from kindergarten through the junior high school. Program will include: Mimeographed instructional materials. Work with materials and concepts of science. Discussions of the possible correlation of the total school program. Emphasis on improving practices through self - identification with practical teaching problems, in the area of science in childhood education with special reference to your school. Opportunity to explore and view several elementary science exhibits. 9:00 - 12:00. (June 13 - July 1.)

225. The Teaching of Reading and the Language Arts (3) I, II Bell, Magoun

A basic course in elementary curriculum and methods involving the functions, organization of materials, and methods of teaching reading and the language ars of spelling, handwriting, speaking, and written communication. P, 151 or CR. 1st term: 10:50 - 12:30. 2nd term: 9:00 - 10:40.

226. The Teaching of Arithmetic (3) I, II Blecha, Magoun

A basic course in elementary curriculum and methods involving the functions, organization of materials, and methods of teaching arithmetic. P, 151 or CR. 1st term: 7:00 - 8:40. 2nd term: 1:30 - 3:10.

227. The Teaching of Social Studies and Science (3) I — Crowder

A basic course in elementary curriculum and methods involving the functions, organization of materials, and methods of teaching the social studies and the elementary sciences. P. 151 or CR. 1:30 - 3:10.

228s. Aviation Education Workshop (3) II — Blecha

For elementary and secondary classroom teachers and school administrators. Preparation to aid pupils looking forward to careers in the air age and the predicted age of travel in space. A general education approach to aviation. American air power, and the simple scientific principles of aviation. Orientation flights. Preparation of curriculum materials at all grade levels. A 2 - day symposium on rockets, missiles, satellites, and inter - planetary space travel, this course is designed to keep the teacher informed on recent developments, and to explore their significance. 9:00 - 12:00. (July 18 - August 5.)

231. The High School as an Institution (3) I, II — Gavlak

Historical development of the high school; aims, functions, and outcomes; the curriculum; relation to other divisions of the school system. P. 3 units in education. 1st term: 7:00 - 8:40. 2nd term: 9:00 - 10:40.

234. General High - School Methods (3) I, II — Klein, Letson

Teaching techniques based on principles of educational psychology. P. 151, 231, or CR. 1st term: 9:00 - 10:40. 2nd term: 7:00 - 8:40.

240. Principles and Techniques of Guidance (3) I, II — Christiansen, Hall

Introductory course for those who expect to specialize in student guidance or for the teacher to whom some functions of guidance are assigned. P. 231, Psych. 1a. 9:00 - 10:40. 2nd term: 10:50 - 12:30.

241. Counseling Techniques (3) II — Hall

Methods and techniques of studying the individual student; collation and interpretation of counseling data and its application to the solution of individual problems. 1:30 - 3:10.

242. Occupational and Educational Information (2) II — Young

Study of occupational and educational opportunities of youth and sources of information relating thereto; methods of organizing and filing informational materials; disseminating occupational and educational information in guidance programs. P. 240 or CR. 7:30 - 8:40.

247. Counseling College Students (3) II — Rhodes

Principles and techniques of counseling and their application to the work of the student personnel administrator. P. 246 or CR. 9:00 - 10:40.

250. Mental Hygiene (3) I — Calmes

The principles of mental hygiene and their application to personal and social needs. P. 151. 10:50 - 12:30.

254. Statistical Methods in Education (3) I, II — Heath, Merritt

Elementary methods of dealing quantitatively with school data and data resulting from experimental investigations. P. 9 units in education or psychology. 7:00 - 8:40.

256. The Education of Gifted Children (3) I — Hunt

The relationship of the problem presented by the gifted child to the total program of the classroom and of the school. Basic theories and techniques of teaching the gifted child will be discussed, evaluated, and applied. 9:00 - 10:40.

257. Educational Tests and Measurements (3) I, II

The principles underlying the making and using of informal objective examinations; practice in making and scoring such examinations; surveys of standard tests in the respective fields. P. 151. Fee, $1.50.

1st term:	Section A	10:50 - 12:30	Haberland
	Section B	1:30 - 3:10	Heath
2nd term:	Section A	10:50 - 12:30	Harris
	Section B	1:30 - 3:10	Haberland

259. Chronological Growth and Development of the Child (3) I — Rhodes

The nature of growth; the genetic and physiological bases of growth; the measurement of physical growth; the assessment of progress in physical growth; skeletal and dental growth; the relation between physical growth and the behavior in the child. 9:00 - 10:40.

263s. Workshop on Education of Migrant Children (3) II — Sherman

This workshop will concentrate on exploration and development of the curriculum for children of migratory farm families of Arizona. Special attention will be given to: (1) learning more about children of migratory families; (2) analyzing problems of migrant children in relation to their education; and (3) developing curriculum materials that will aid teachers in teaching these children. 1:30 - 4:30. (July 18 - August 5.

276. The Teaching of Reading and Language Arts in the Kindergarten - Primary Grades (3) I — Syverson

A basic course in kindergarten and early elementary curriculum and methods involving techniques and materials for the introduction of reading, spelling, handwriting, speaking, and written communication at the kindergarten - primary level. P, 151. 7:00 - 8:40.

279. Nursery School - Kindergarten Curriculum and Methods (3) I — Syverson

Curriculum and methods of teaching young children; relation of nursery school and kindergarten to the elementary school and community. P, 151. 10:50 - 12:30.

292s. The Improvement of Instruction in Typewriting (2) I — Asmus

Current methods and research in teaching typewriting. Review of current literature and analysis of teaching methods, procedures, and devices. Emphasis is on practical improvement of instruction in typewriting. P, 197c or equivalent. 9:00 - 10:40.

293s. The Improvement of Instruction in Office Practice (3) II — Staff

Current techniques and procedures in teaching office practice, machines, and related areas. Acquaintanceship with latest developments in office equipment. Consideration of proficiency standards and plans for maximum classroom use of equipment. P, 197c or equivalent. 10:50 - 12:30.

295bs. Business Education Workshop (1 - 2) I — Langen, Haines

The program will be an informative and practical presentation on the content and organization of the various high-school business courses. The range of consideration will be through office and distributive education work - experience programs and certain of the skill and non - skill business courses. The program is not a methods course, but will emphasize the principles of comprehensive instruction relating to the broad background of business information: concepts, attitudes, economic significance, appreciations, and ideals as well as current working experiences. Those outside the business area interested in guidance and counseling, as well as teachers of business subjects, will find the program of value. 1:30 - 4:10. (June 13 - 25.)

297. Educational Sociology (2) II — Hambenne

The school as a social institution. The social functions of the school. The social processes, socialization, and stratification in education. The informal and formal systems, and the bureaucratic structure of the school. P, Soc. 1 or 2. 9:00 - 10:10. (Identical with Soc. 297.)

298s. Principles & Problems of Business Education (2) II — Melson

A study of past, current and probable future business education practices and problems. 1:30 - 2:40.

301. Current Problems in Education (2) I, II — Crowder, McCann

A systematic study of the problems found in current educational literature, research studies, school reports, and similar material. Required of all graduate students having education as a major or minor. 10:50 - 12:00.

306. Comparative Education (3) II — Gustafson

A study of national systems of education and the development of underlying philosophies and practices. Contemporary movements in the educational systems of western European countries with special reference to similar movements in the United States and certain Latin - American countries. 1:30 - 3:10.

310. Philosophy of Education (3) I — Miller

Function of education in a democracy; survey of educational thought and theories; determination of educational objectives. 10:50 - 12:30.

313s. Radio and TV for Teachers (3) I — Markland

Production and usage of radio and television programs for elementary and secondary schools. with laboratory practice in Radio - TV Bureau. 1:30 - 3:10.

314. Arizona State School System and School Law (3) I — Larson

Public education in Arizona; the code relating to schools and a comparison of this code with other state codes and ideal codes. Open to seniors. P, for seniors, 6 units in education. 9:00 - 10:40.

316s. Administration and Supervision of Audio-Visual Aids (2) I — Shelley

Supervision and administration of the audio - visual program in the individual school and in city and district systems. Content includes budgeting, selection and evaluation, distribution and housing of materials, qualifications and duties of staff, school plant requirements, and measures for appraising program adequacy and effectiveness. P, 12 units in education. 10:50 - 12:00.

319. Problems in Special Education (2) I — Hunt

A seminar approach to the evaluation of recent research and literature in the field of special education. Reports, lectures, and discussions of research. P, 15 hours in special education and related graduate course work. 1:30 - 2:40.

325. Communication Skills in the Elementary School (3) I — Bell

Review of trends in the teaching of communication skills of reading, speaking, listening, and writing in the elementary school curriculum. Both action - research and reviews of the research literature with respect to these skills will be emphasized. The course is designed primarily for in-service public school personnel who are working toward advanced degrees. 7:00 - 8:40.

327. Elementary - School Administration and Supervision (3) I — Tate

The administrative and supervisory problems of the principal of an elementary school or of a small school system. Special emphasis will be placed on teacher participation in planning and administering the education program. 9:00 - 10:40.

334. The Teaching of English Composition (2) II — Muir

An introduction to the problems and procedures in composition courses, with emphasis on Freshman English and attention to secondary - school courses and to the relationship between high school and college English. (Identical with English 334.) 9:00 - 10:10.

336. High School Administration (3) I — Letson

The problems of organiaztion and administration of the modern high school. 10:50 - 12:30.

337. Secondary School Supervision (3) II — Carson

A comprehensive treatment of the organization used, the relationships involved, and the techniques developed for the effective supervision of modern high school instruction. 7:00 - 8:40.

338. Curriculum Construction (3) II — Klein

The curriculum and its relationships; basic theories and techniques of curriculum construction discussed, evaluated, and applied. P, 231. 10:50 - 12:30.

343. Organization and Administration of Guidance Programs (2) I — Christiansen

An analysis and evaluation of the administrative organization for guidance and of the techniques for counseling of pupils. 1:30 - 2:40.

353. Advanced Educational Psychology: Creativity (3) II — Rhodes

Creativity is a subject of wide interdisciplinary interest. The purpose of this course is to define and refine the concept of creativity with a variety of approaches: to suggest criteria for recognizing the process of creativity, especially in children; and to identify and attempt to assess those qualities of human behavior that facilitate and those that restrict creative behavior. P, 151 and graduate standing in any department. 1:30 - 3:10.

354. Advanced Statistical Methods in Education (3) II Merritt

Further methods of dealing quantitatively with educational data. Required of all doctoral students in education. P. 254 or equivalent. 10:50 - 12:30.

356. Field Practices in Teaching Exceptional Children (6 - 6) I - II Ganoung

Directed teaching and remedial practices in a public school, special school, or institution. This course follows in close sequence the class work in special education. P. 15 hours in special education and related graduate course work. Hours to be arranged.

358. Individual Diagnostic Techniques in Education (3) II Haberland

Practices in diagnostic testing, applied to the improvement of teaching and to the correction of learning difficulties of exceptional children. P. 151, 240, 257. 9:00 - 10:40.

360. General School Administration (3) II McCann

The organization, administration, and supervision of city and town school systems. 7:00 - 8:40.

364. Problems in School Administration (2) II Viall

Review of current literature in school administration. Individual or group investigations related to school administration. P. 326, 336 or 360. 9:00 - 10:10.

370. Personnel Problems in School Administration (2) II Viall

1:30 - 2:40.

371. School Finance (3) I Larson

Sources and distribution of school funds; accounting and reports. 1:30 - 3:10.

373. Planning and Maintenance of School Buildings (3) I Gavlak

A comprehensive treatment of the problems involved in the planning, construction, and maintenance of school buildings. An opportunity will be afforded to visit and evaluate some of the newer and more adequate school buildings. P. 12 hours in education. 10:50 - 12:30.

376. Supervision: Its Organization and Administration (3) I Garretson

Qualifications and preparation of supervisors; essential activities in supervision; organization and administration. 9:00 - 10:40.

COLLEGE OF EDUCATION

390. Techniques in Education Research (3) I, II

Required as part of the graduate major or minor in education. Open to seniors.

1st term:	Section A	1:30 - 3:10	McCann
	Section B	7:00 - 8:40	Miller
2nd term:	Section A	9:00 - 10:40	Letson

399. Seminar (0) I — Staff

Hours to be arranged.

ELECTRICAL ENGINEERING

22. Introduction to Circuit Theory (3) I, II — Staff

Introduciton to basic concepts in modern network theory to include complex plane representation of the solution of differential equations, variable and single frequency, sinusoidal, steady state solutions. Introduction to Fourier analysis and complex algebra. P, CE. 5, Math. 79b Hours to be arranged.

80. Fields of Static and Moving Charges (3) II — Staff

An introduction to static electric and magnetic fields including Coulomb's law, Gauss's law, Ampherc's law, and Laplace's equation. P, Math. 79b, CE. 5. Hours to be arranged.

122. Electrical Circuit Theory (3) I, II — Staff

A detailed treatment of basic concepts in modern network theory based upon the general concepts introduced in EE. 22. Emphasis upon vector diagrams, locus diagrams, and energy considerations in single and variable frequency steady state solutions. Introduction to the Fourier and Laplace transforms. P, 22, 80, Math. 180. CR. 123. Hours to be arranged.

123. Circuits Laboratory (1) I, II — Staff

Experimental aspect of EE. 122. P, CR 122. Fee, $5. Hours to be arranged.

124. Electric Circuit Theory II (3) II — Staff

A continuation of EE. 122 encompassing elementary theory of functions of a complex variable, inverse transform techniques, limitations imposed on immittances from energy considerations, and an extension of the basic concepts to networks with distributed parameters. P, 122. Hours to be arranged.

125. Circuits Laboratory (1) II — Staff

Experimental aspects of EE. 124. P, CR 124. Fee, $5. Hours to be arranged.

132. Economic Problems for Engineers (3) II — Staff

Business problems requiring engineering techniques for their solution; analysis of investment problems confronting engineers. P, senior standing in engineering. Hours to be arranged.

154. Principles of Electronics (3) II — Staff

Theory of vacuum and gas tubes and transistors; equivalent circuit representation of electronic devices; analysis and design of Class A linear circuits under steady state and transient conditions, and Class B and C power amplifiers; negative resistance oscillators. P, 122, Phy. 130a, CR 155. Hours to be arranged.

155. Electronics Laboratory (1) II — Staff

Experimental aspects of EE. 154. P, 154 or CR. Fee, $5. Hours to be arranged.

240. Theory of Automatic Control (3) I — Staff

Theory and analysis of closed loop systems and control applications. P, 124, 162. Hours to be arranged.

241. Automatic Control Laboratory (1) I — Staff

Illustrating EE. 240. P, 240 or CR. Fee, $5.

322. Network Synthesis II (3) II — Staff

A continuation of the development of synthesis methods; synthesis of two-terminal-pair networks is developed. The approximation problem is treated in some detail. Application of the material to wide-band amplifiers and feedback systems is discussed. P, 320. Hours to be arranged.

ENGLISH

Professor Muir
Associate Professor Irmscher
Assistant Professors Huggins, Ramsey, Sigworth
Instructors Bassan, Childs, Clark, Cuomo, Gaede, Granger, Leininger, Longoni, McNiece, Robinson, Rosenblatt, Schiffer

1. Freshman Composition (3) I

The study and practice of good writing, with emphasis upon exposition; review of English fundamentals; regular theme writing; collateral reading.

Section A	7:00 - 8:40	Robinson
Section B	7:00 - 8:40	Granger
Section C	7:00 - 8:40	Clark
Section D	9:00 - 10:50	Cuomo
Section E	1:30 - 3:10	Staff
Section F	10:50 - 12:30	Schiffer

2. Freshman Composition (3) I — Leininger

The equivalent of English 1 for students whose proficiency in English grammar and usage permits advanced placement; theme writing; library paper; collateral reading. Students who make a grade of 2 or better will be permitted to take English 4. 7:00 - 8:40.

3. Freshman Composition (3) I, II

Continued practice in composition with emphasis upon objective writing; library paper; readings in fiction and non-fiction. P, 1 or 2 or advanced standing.

1st term:	Section A	7:00 - 8:40	Rosenblatt
	Section B	7:00 - 8:40	Bassan
	Section C	10:50 - 12:30	Longoni
2nd term:	Section A	7:00 - 8:40	Staff
	Section B	7:00 - 8:40	Staff
	Section C	10:50 - 12:30	Staff
	Section D	10:50 - 12:30	Staff

4. Types of Modern Literature (3) II — Gaede

Readings in modern novel, drama, short story, and poetry. Term paper required. Course designed for freshmen who have completed English 2 with a grade of 2 or better. Open to other students, who have been granted advanced placement, and to students of at least sophomore standing who have completed the freshman composition requirements. 7:00 - 8:40.

113. Introduction to Poetry (3) I — Childs

The nature and purpose of poetry: metrics and scansion; poetic language and convention; familiarity with a number of great poems with close reading and analysis of selected poems. P, 2 or 3. 7:00 - 8:40.

123. Business Writing (3) I — Ramsey

Practice in writing effective business letters and reports. P, 2 or 3. 10:50 - 12:30.

224s. Literature of the Southwest (2) I — Huggins

The last frontier in fact and fiction, the accounts of early travelers, the development of the "Western story," the regional novel. Usful bibliography. 10:50 - 12:00.

226a-226b. Survey of English Literature (3 - 3) I - II Huggins, McNiece

Required of all majors and teaching minors. 226a is not prerequisite to 226b. 9:00 - 10:40.

233s. Prose Fiction Since 1900 (3) I — Sigworth

Short stories and novels studied intensively with particular attention to various critical approaches to fiction. P, Junior standing or equivalent. 10:50 - 12:30.

234. Modern Drama (3) I — Irmscher

Continental and British drama from Ibsen to the present. 9:00 - 10:40.

237b. Chaucer and His Age (3) II — Muir

Troilus and Cressida, The Legend of Good Women, and other selections read in Middle English. 237a is not prerequisite to 237b. One semester is required of all graduate majors who do not have undergraduate credit in Chaucer. 10:50 - 12:30.

250a. Literature of the Bible (2) I — Irmscher

The most notable portions of the Bible, with historical and social background. 10:50 - 12:00.

334s. The Teaching of English Composition (2) II — Muir

An introduction to the problems and procedures in composition courses, with emphasis on Freshman English and attention to secondary-school courses and to the relationship between high-school and college English. (Identical with Ed. 334.) 9:00 - 10:10.

GEOLOGY

Associate Professor DuBois
Instructors Gardner, McCullough

1a-1b. Elementary Geology (4 - 4) I, II — McCullough

Fundamentals of physical and historical geology. Fee, $4 each term. 8:50 - 10:40 M - F; Lab. 1:30 - 4:20 MTTh.

121. Structural Geology (3) II — Gardner

The structures resulting from rock formation and deformation. Practice in solving structural problems. P, 1a or 51, Math. 24, Engineering Graphics 4. Fee $4. 9:00 - 10:10 M - F; Lab. 10:15 - 1:15 MTTh.

212s. Field Geology (Summer Camp) (3) — DuBois

Field methods of geologic mapping and the preparation of geologic reports. Laboratory comprises daily field work. Required of geological engineers and geology majors. P, 9, 106, 121. Fee, $100. Students required to report to camp or to nearest rail or bus station. Graduate credit permitted if student has completed 6 units of field geology. (June 13 - July 16.)

213s. Geologic Mapping (Summer Camp) (3) — DuBois

Field methods of geologic mapping and the preparation of geologic reports. Laboratory comprises daily field work, and overnight trips to Canyon de Chelly, Grand Canyon, and Buell Park. Required of geological engineers and geology majors. P, 212s. Fee, $100. Students required to report to camp or to nearest rail or bus station. Graduate credit permitted if student has completed 6 units of field geology. (June 13 - July 16.)

GERMAN

Assistant Professor Oppermann
Instructor Luz, Smitham, Woloshin

1a-1b. Elementary German (4 - 4) I, II — Woloshin - Smitham

In case of students in the College of Liberal Arts, degree credit in 1a is allowed only after completion of 1b, except as provided on page 221 of the Biennial Catalogue. 9:00 - 10:10 and 11:00 - 12:05 (Class meets twice daily.)

1g-2g. Training in Reading German for Graduates (0) I, II — Smitham - Oppermann

A summary of basic grammar essential to a reading knowledge of the language will be accompanied by readings of increasing difficulty both in general literature and the student's chosen field of specialization. 9:00 - 10:40.

3a-3b. Intermediate German (4 - 4) I, II — Luz - Woloshin

9:00 - 10:10 and 11:00 - 12:05. (Class meets twice daily.)

196. Independent Study (2) I, II — Woloshin - Smitham

Hours to be arranged.

299. Special Problems (2) I, II — Woloshin - Smitham

Hours to be arranged.

FINE ARTS CENTER

GOVERNMENT

Professor Kelso (Acting Head of Department)

Associate Professor Gomez

Assistant Professors Burke, Mann, Toma

1. Introduction to Government (3) I — Toma
   A comprehensive introduction to government designed for both majors and non-majors. The meaning of political science and relation to other disciplines. The state and forms of government. Legal systems. The theory and organization of the modern state. Public opinion, parties, and propaganda. 10:50 - 12:30.

2. American National Government (3) I — Mann
   A general survey of the constitutional bases, organization, and functioning of the American national government; recent and current trends. 7:00 - 8:40.

3. American State and Local Government (2) II — Gomez
   A general survey of state and local government; recent and current trends. 9:00 - 10:10.

100s. National and State Constitutions (2) I, II — Burke, Kelso
   Meets the state requirements for a teacher's certificate. For seniors intending to teach. Not open to students with credit in 2 or 3. 9:00 - 10:10.

226. American Political Thought (3) II — Gomez
   American political ideas from colonial times to the present. P, 2 or equivalent.

237. The Legislative Process (3) I — Mann
   A study of the role of the legislature in the framework of the national and state governments. Consideration of the influence of the parties, pressure groups, public opinion, constituencies, the "committee system," the "administration," the Constitution, etc., in the lawmaking process. P, 1 or 2. 9:00 - 10:40.

244. Government in the Soviet Union (3) I — Toma
   Organization, powers, and functions of the political forces in the Soviet Union; some attention to international communism. 9:00 - 10:40.

261a. Public Administration (3) II — Kelso

The development, organization, functions, and problems of national, state, and local administration. 7:00 - 8:40.

272a. Principles of Constitutional Law (3) I — Burke

A study of the principles and concepts of the constitution as revealed in leading decisions of the courts. The development of the concepts and principles of judicial review, federalism, separation of powers, and implied powers. P, 1 or 2. 272a is not prerequisite to 272b. 10:50 - 12:30.

HEALTH EDUCATION

Associate Professor Hansma
Assistant Professor King

71. School and Community Health (3) I, II

Introduction to the school health program of healthful living, health services, and health instruction. Meets certification requirement for teachers. Fee, $1.

1st term:	Section A	9:00 - 10:40	Hansma
	Section B	10:50 - 12:30	King
2nd term:	Section A	7:00 - 8:40	King
	Section B	1:30 - 3:10	Hansma

266. Administration and Coordination of School Health (3) I — Hansma

Administrative aspects of school health program. For administrators, health coordinators, and supervisory personnel. P, 42, 71. 1:30 - 3:10.

272. Safety and Traffic Education (2) II — King

Principles of accident prevention and safety education with emphasis on driver education and traffic safety in secondary schools. Fee, $2. 10:50 - 12:00.

HISTORY

Professor Ewing (Head of Department)
Associate Professor Beatson
Assistant Professor Oswald

1b. History of the United States since 1865 (3) II — Beatson

A general survey of political and social developments from the founding of Jamestown; the westward movement; the development of Western democracy; social and political changes following the Civil War; settlement of the Far West; international affairs. Credit for 1a - 1b not given to those who have credit for History 2a - 2b. 9:00 - 10:40.

2a. History of the Americas (3) I — Ewing

A broad survey of political, economic, and social development of North and South America from the Columbian discovery to the present time. Credit for 2a - 2b not given to those who have credit for 1a - 1b. 9:00 - 10:40.

201a. Colonial America (2) II — Beatson

The American colonies in the 17th century. 10:50 - 12:00.

229b. History of Mexico (2) I — Ewing

Struggle for political, economic, and social stability; international relations; cultural patterns. 10:50 - 12:00.

262. History of the Soviet Union (3) I — Oswald

The Bolshevik Revolution and problems of Soviet Russian history from 1917 to the present. 7:00 - 8:40.

272. Muslim World (2) I — Oswald

A survey of Middle East history and the rise of Arab nationalism since 1800. 1:30 - 2:40.

HOME ECONOMICS

Professors Coulter (Director, School of Nursing), Christopherson, Hall (Director, School of Home Economics)
Associate Professors Allen, Barkley, Wood

13s. Camp Cookery (2) I — Wood

The selection and preparation of foods for camps. Outdoor laboratory periods and field trips to Mt. Lemmon to be arranged. Lab. fee, $10. Registration limited to 20 students. Open to men and women. 10:50 - 12:00 MWF; Lab. 5:00 - 8:00 p.m. TTh.

200sa. Conference on Communications in the Professions (1) II — Coulter, Hall

An intensive course dealing with the basic principles of communcations and their application to some selected disciplines, such as, Nursing, Home Economics, and Business. 8:45 - 12:00 and 1:30 - 4:30. (Class meets twice daily.) (August 15 - 19.)

216. Management of Family Resources (2) II — Hall

A study of the resources available to families, and the use of these resources to obtain family goals. P, 16 and Econ. 1a. 9:10 - 10:10.

221s. Survey of Recent Trends in Foods (2) I — Wood

Recent developments in the processing of foods, formulation of food standards, and experimental work in cookery procedure, as reported in current literature. 9:00 - 10:10.

257. Conference on Techniques in Clothing Construction (2) I — Allen

A course in new methods of clothing construction: to provide a basis for selecting construction techniques for various age groups, to give attention to problems of new fabrics, to assemble materials to aid teaching of the subject. 1:00 - 5:00. (June 13 - 24.)

309s. Supervision in Home Economics Education (2) II — Barkley

The theory, principles, and techniques of pre-service and in-service training of home economics teachers; organization, administration and evaluation of homemaking programs. Designed for experienced teachers of homemaking who are interested in supervising student teachers or working with home economics teachers in-service. 10:50 - 12:00.

310. Investigation and Studies in Home Economics (2) I — Barkley

A critical study of the research literature and research techniques appropriate to the solution of problems in home economics. Selecting a problem and developing procedures for that problem. 9:00 - 10:10.

337s. Family Life Education (2) I — Christopherson

A study of recent trends, research, publications, and resources in family life education at the secondary and college levels. Designed primarily for graduate students, teachers, ministers, and others who intend to work with youth groups or young adults. 9:00 - 10:10.

HORTICULTURE

Assistant Professors Fazio, Folkner

290s. Landscape Management (2) I — Folkner, Fazio

Problems in designing, planting, and maintaining small home grounds and farmsteads in Arizona, with special reference to new species and methods. P, 12 units in Horticulture and related subjects. Fee $3. 1:40 - 3:55. (June 13 - 29.)

HUMANITIES

Professors Percy (Head of Department), Beattie, Brooks, Gegenheimer, Schmitz
Assistant Professors Huggins, Keppler, Sigworth
Instructors Best, Kiefer

50a. Introduction to Humanities (4) I

The cultural life of the Western World as it developed in literature, art, and philosophy from the Greeks to the present. Required of sophomores in Business Administration and Liberal Arts. P, freshman composition. Fee, $1 each term.

Section A	7:30 - 8:35 and 8:45 - 9:55	Best
Section B	7:30 - 8:35 and 8:45 - 9:55	Kiefer
Section C	9:00 - 10:05 and 10:15 - 11:25	Beattie
Section D	9:00 - 10:05 and 10:15 - 11:25	Percy
Section E	9:00 - 10:05 and 10:15 - 11:25	Schmitz

50b. Introduction to Humanities (4) II

The cultural life of the Western World as it developed in literature, art, and philosophy from the Greeks to the present. Required of sophomores in Business Administration and Liberal Arts. P, freshman composition. Fee, $1 each term.

Section A	7:30 - 8:35 and 8:45 - 9:55	Sigworth
Section B	9:00 - 10:05 and 10:15 - 11:25	Brooks
Section C	9:00 - 10:05 and 10:15 - 11:25	Kiefer
Section D	9:00 - 10:05 and 10:15 - 11:25	Keppler

110s. Humanities Study Tour (6) I Gegenheimer

A study tour of Europe conducted by a member of the Humanities staff and closely integrated with the Humanities course. Lectures begin in New York City and continue on the boat and during the tour of the continent. Leave New York June 27; return to New York August 10. For full information write to Dr. Albert F. Gegenheimer, Department of English, The University of Arizona.

MARKETING

Assistant Professor Uhl

261. Marketing Principles and Practices (3) II Uhl

Marketing methods, institutions, functions, and policies; markets, planning marketing activities. P, Acctg. 1b, Econ. 1b or 2b. 1:30 - 3:10.

MATHEMATICS

Professor Graesser

Associate Professor Trifan

Assistant Professors Foster, Lim

Instructors Diamos, Hancock, Simley

Graduate Assistants DeVore, Ennett, Fritsche, Osborne, Sherman, Simpson, Zerger

11. Intermediate Algebra (3) I, II

Students offering more than 1 entrance unit in algebra do not receive credit for this course. Engineering and mining students receive ½ entrance unit. P, 1 entrance unit in algebra. Supersedes 69a.

1st term:	Section A	7:00 - 8:40	Ennett
	Section B	7:00 - 8:40	Sherman
2nd term:	Section A	7:00 - 8:40	Zerger

HOME ECONOMICS PATIO AND BRIDGE

20. College Algebra (3) I, II
P, 1½ entrance units in algebra or 11.

2nd term:	Section A	7:00 - 8:40	Osborne
	Section B	7:00 - 8:40	Devore
1st term:	Section A	10:50 - 12:30	Simpson

24. Plane Trigonometry (2) I, II — Trifan, Foster
Optional slide rule work permitted. P, 1 entrance unit in geometry, and either 1½ entrance units in algebra or 11. 1st term: 10:50 - 12:00; 2nd term: 7:30 - 8:40.

79a-79b. Analytic Geometry and Calculus (5 - 5) I - II
P, 44 or 20 and 24.

1st term:	79a	Section A	7:30 - 8:40 and 10:50 - 12:25	Graesser
		Section B	7:30 - 8:40 and 10:50 - 12:25	Hancock
	79b	Section A	7:30 - 8:40 and 10:50 - 12:25	Simley
2nd term:	79a	Section A	7:30 - 8:40 and 10:50 - 12:25	Diamos
	79b	Section A	7:30 - 8:40 and 10:50 - 12:25	Staff

180. Calculus and Differential Equations (5) I, II — Lim, Fritsche
Partial differentiation, multiple integration, infinite series, together with ordinary differential equations. P, 79b. Not available to students with 95b. 7:30 - 8:40 and 9:00 - 10:35.

201. Boundary Value Problems (3) II — Staff
Partial differential equations, solution of boundary value problems by use of Fourier series and integrals, Bessel functions, Legendre polynomials. P, 180. 7:00-10.50 - 12:00.

202. Topics in Applied Mathematics (3) I — Trifan

Vector algebra, vector differential calculus, vector integral calculus; theorems of Stokes, Gauss, and Green; applications; Laplace transformation; elliptic integrals. Supersedes 202a. P, 180. 7:00 - 8:40.

212. Non - Euclidean Geometry (3) II — Foster

For prospective high-school teachers. P, 95a or 79a. 10:50 - 12:30.

297. Foundations and Nature of Pure Mathematics (3) I — Staff

Basic concepts of modern mathematics, the axiomatic method, groups, axiomatic development of the real number system from the Peano axioms, well-ordered sets, and order types. P, 180 or 181. 10:50 - 12:30.

MECHANICAL ENGINEERING

Professor Marcoux

Associate Professor Ulrich

120. Introduction to Mechanical Behavior of Material (3) I — Marcoux

Theory of the structure of matter as related to the understanding of the properties of materials. Principles and criteria upon which are based the selection and treatment of engineering materials for design purposes. P, Phys. 130b or CR. 1:30 - 3:10.

130. Fluid Mechanics (3) II — Ulrich

Fundamentals of fluid mechanics covering the properties of fluids, fluid statics; basic fluid dynamic equations, concepts and definitions; application of vector analysis to fluid mechanics; compressible, incompressible, and viscous effects; two-dimensional flow of an ideal fluid. P, CE. 5 and Math. 180. 9:00 - 10:40.

141. Thermodynamics (4) I — Marcoux

Thermodynamics properties and behavior of substances. P, Math. 180. 7:30 - 8:40 and 3:00 - 4:10. (Class meets twice daily.)

142. Heat Transfer (3) II — Ulrich

Energy transfer by conduction, convection, and radiation. P, 141 and 132. 1:30-3:10.

MINING AND METALLURGY

Professor Krumlauf

Associate Professor Drevdahl

209. Mine Surveying (3) I — Drevdahl, Krumlauf

Surveying and mapping of a portion of an underground mine. The course is added to the second winter semester schedule and is given immediately following the close of the second semester. The equivalent of two weeks' work is required at some mine in Arizona and 50 hours of laboratory work on the campus. P, 102, Civil Eng. 52. Fee, $15, which does not include room and board. (June 2 - 18.)

MUSIC

Professors Buchhauser (Director School of Music), Bloom, Fain, Hartsell, Johnson, Lee

Associate Professors Lotzenhiser, McBride, Sammarco

Assistant Professors Akmajian, Church, Fruchtman

Instructor Hardisty

Visiting Lecturers Kjelsan, Pitts

1a-1b. Music Appreciation (2 - 2) I - II — Johnson, Fruchtman

For non-majors with no technical knowledge. Music of the various periods studied in relationship to other arts; development of the critical attitude through training. 9:10 - 10:20.

10C. Choral Society (1) I, II — Bloom

Open to all students. No previous musical experience necessary. A varied repertory. Fee, $1 each term. 11:35 - 12:40.

21. Woodwind Instruments Class (1) I — Fain

Elementary instruction. Fundamental playing technique on flute, oboe, clarinet, saxaphone, and bassoon. 9:10 - 10:20.

22. Brass Instruments Class (1) II — Lotzenhiser

Elementary instruction. Fundamental playing technique on cornet, trumpet, French horn, trombone, baritone, and tuba. 7:35 - 8:40.

25a. Piano Class (1) I — Church

Beginning instruction; adult beginners text with supplementary materials; transposition, accompaniment patterns, original compositions, improvisation, sight reading, scale forms. 7:35 - 8:40.

26a. Voice Class (1) I — Akmajian

Beginning instruction. Introduction and development of basic skills, breathing, diction, tone, rhythm, sight singing, repertory songs in English. Practical training in singing without specialization. 7:35 - 8:40.

33a-33b. Theory II (4 - 4) I - II — McBride, Hardisty

Continuation of Theory I. Study of secondary seventh chords, altered chords, modulation, chorales. Reading in all clefs. Keyboard harmony. P, 32b. 9:00 - 11:30.

151a. Basic Conducting Techniques (2) I — Lee

Fundamental study of conducting patterns, development of skills and dexterity in chord and instrumental conducting. P, 8 units in music. 1:30 - 2:40.

203. Music of the Classical Period (2) II — Fruchtman

The period of Haydn, Mozart, and Beethoven with emphasis on the musical style and structure. P, 6 units in music including 1a - 1b or 6a - 6b and 6 units in literature or humanities. 7:30 - 8:40.

205. Music of the Twentieth Century (2) I — Fain

Styles and trends in contemporary music with emphasis on American composers. P, 6 units in music including 1a - 1b or 6a - 6b and 6 units in literature or humanities. 7:30 - 8:40.

231a. Form and Analysis (2) I — Johnson

A course in the technique of harmonic and contrapuntal analysis; a study of formal design and method of structural treatment in representative scores of music from the seventeenth to the twentieth centuries. P, 33b. 10:40 - 12:00.

233a. Orchestration I (2) II — Lotzenhiser

A study of the instruments of the orchestra together with the practical study of the art of symphonic scoring. Original work and transcriptions. P, 33b. Hours to be arranged.

235. Composition Techniques (2) I — McBride

Creative work in the fields of modern harmony, counterpoint, and orchestration. The student may take work in any one or all of these areas. P, 33b. May be repeated for credit to a total of 10 units. Hours to be arranged.

237. Band Arranging (2) I, II — Lee, Lotzenhiser

Detailed study of band instrumentation; major works transcribed for concert bands. P, 233a. Hours to be arranged.

271. Music for the Elementary Classroom Teacher (3) I — Hartsell

An introduction to teaching music in the elementary school through a presentation of the basic concepts, skills, and procedures for teaching music to children. Laboratory period weekly devoted to building piano keyboard and other instrumental facility. Not open for credit to music majors. 7:00 - 8:40.

272. Music Materials and Activities for the Elementary Classroom Teacher - Primary Grades (2) II — Sammarco

Presentation of basic materials and activities for teaching music to young children from kindergarten through third grade. Observation of demonstration teaching in music with children in the public schools. P, music 271. Not open for credit to music majors. 7:30 - 8:40.

RADIO - T. V. BUREAU

273. Music Materials and Activities for the Elementary Classroom Teacher - Intermediate Grades (2) II — Sammarco

Presentation of basic materials and activities for teaching music to children in grades four through six. Observation of demonstration teaching in music with children in the public schools. P, 271. Not open for credit to music majors. 9:00 - 10:10.

351. Advanced Conducting (2) I — Bloom

A study of the styles of choral, band and orchestral literature as they pertain to the problems of the conductor. References to the styles of all periods with a special emphasis on the contemporary and modern. 9:10 - 10:20.

370s. General Music Education Workshop (3) I — Hartsell, Pitts, Sammarco

Open only to experienced classroom teachers, music supervisors, consultants, and directors of music who desire to obtain practical and usable information about quality education for children's musical growth and development. The course will: emphasize the most attractive teaching materials from many series of recent music texts; present activities which constitute a worthwhile classroom music program; demonstrate how to teach and use the notational symbols of music with children; develop approaches for helping children gain skill in listening to music; assist the classroom teacher in using the autoharp and tuned bell blocks; enrich other musical activities; and enable each participant to learn a variety of singing games and dramatizations for use at both the primary and intermediate grade levels. 9:00 - 11:30 and 1:30 - 3:30. (Class meets twice daily.) (June 27 - July 9.)

299. Special Problems (1 to 5) I, II — Staff

3:30 - 4:30. (June 13-24.)

399. Seminar (1 to 2) I — Staff

Hours to be arranged.

399A. Seminar in Junior High Vocal Music (1) I — Kjelsan, Bloom

3:30 - 4:30. (June 13 - 24.)

399B. Seminar in High-School Instrumental Music (1) I — Johnson

1:30 - 2:30. (June 13 - 24.)

399C. Seminar in Elementary Music Education (1 to 2) I — Pitts
2:30 - 3:30. (June 27-July 8.)

399D. Seminar in Beginning String Instruction (1) I — Johnson, Murray
2:30 - 3:30. (June 13-24.)

400. Research (2 to 4) I, II — Staff
Hours to be arranged.

410. Thesis (2 to 4) I, II — Staff
Hours to be arranged.

APPLIED MUSIC

(Hours to be arranged.)

Individual Instruction:

Piano (1) I, II	Church, Sammarco
Organ (1) I	Buchhauser
Voice (1) I	Akmajian
Strings (1) I, II	Johnson, Fruchtman
Band Instruments (1) I, II	Fain, Lotzenhiser

315a-b. Problems in Applied Music and Ensembles (1) I - II — Staff

315a: For students with graduate standing in music who wish to undertake special study problems dealing with applied music. May be repeated for credit. Hours to be arranged.

315b: For students with graduate standing in music who wish to participate in ensembles and pursue special study problems dealing with techniques and literature. Presentation of a critique paper required of all students registering for 315b. May be repeated for credit. Hours to be arranged.

PHARMACY

299. Special Problems (1 to 5) I, II — Staff
Special problems in pharmacy, pharmaceutical chemistry, pharmacology, pharmacognosy, or pharmacy administration. P, upper-division standing in the Pharmacy College. Fee, $5. Hours to be arranged.

400. Research 1 to 5) I, II — Staff
Hours to be arranger. Fee. $10.

410. Thesis (1 to 8) I, II — Staff
Hours to be arranged.

420. Dissertation (1 to 9) I, II — Staff
Hours to be arranged.

PHILOSOPHY AND PSYCHOLOGY

Professors Mulligan, Simley
Associate Professors Bretall, Hurlbutt, Marquart, Meadow
Assistant Professor Coan
Instructor Cowan

11a-11b. Introduction to Philosophy (3 - 3) I - II — Hurlbutt, Bretall
Man's interpretation of the nature and meaning of reality, of conduct, and of his own thinking. 10:50 - 12:30.

12a-12b. Logic (3 - 3) I - II — Cowan
Principles of valid thinking: the nature of inference and its applications. 9:00-10:40.

20a. World Religions (2) II — Bretall

A comparative study of the major principles of Christianity, Judaism, Mohammedanism, Buddism, Hinduism, Confucianism, Taoism. 9:00 - 10:10.

228. Principles of Esthetics (3) I — Hurlbutt

The nature and value of the arts; principles and media of expression. P, 6 units in philosophy other than 12a - 12b, or 6 upper-division units in the history of art. (Identical with Art 228.) 9:00 - 10:40.

1a-1b Elementary Psychology (3 - 3) I - II — Simley, Coan

7:00 - 8:40.

200s. Introduction to Clinical Psychology (3) I — Meadow

Personality and behavior problems. Theory, methods of measurement, diagnosis; and theories of psycho-analytic, client centered, play group and other methods of psychotherapy. P, one year of psychology. 1:30 - 3:10. Fee, $5.

213. Genetic Psychology - Childhood (3) II — Marquart

The child from conception to adolescence, with emphasis upon experimental analysis of the development of behavior. 9:00 - 10:40.

214. Development of Human Behavior Adolescence (3) II — Marquart

The principal characteristics of American adolescent behavior. Problems of physical, emotional, social and vocational adjustment. 1:30 - 3:10.

216. Personality (3) II — Coan

Theories of personality; methods and results of personality study. 10:50 - 12:30.

218. Abnormal Psychology (3) I — Simley

A study of the nature and etiology of the various forms of behavior disorder, mental deficiency, and other deviations. A critical evaluation of current theories. 10:50-12:30. Fee, $3.

253. Group Dynamics (3) II — Mulligan

Analysis of factors and processes of social groups. Deals with such problems as group leadership, group effectiveness, group goals, communication within groups, and their individual members. P, Soc. 1, and 3 additional units of sociology or Psych. 1a - 1b. (Identical with Soc. 253.)

395. Practicum in Diagnostic Techniques (2) I — Meadow

Practice in clinical evaluation. P, 302 or CR. (May be taken twice for credit.) 9:00 - 10:10.

PHYSICAL EDUCATION FOR MEN

(Open to men and women)

Assistant Professors Roby, Tatum
Visiting Lecturer Barringer

7s. Tennis (1) I — Roby
Student provides equipment. Fee, $2, deposit, $1. 9:00 - 10:10.

10s. Golf (1) II — Tatum
Student provides equipment and transportation. Green fee, $12. 1:30 - 4:15 TTh.

28s. Intermediate Swimming (1) II — Tatum
Instruction for students with some swimming experience. Emphasis on improvement of strokes and diving. Fee, $2, deposit, $1. 9:00 - 10:00.

250s. Physical Fitness for Children and Youth (3) I — Barringer
A workshop program providing the opportunity for teachers to observe and work with children on all school levels (primary, intermediate, junior high, and high-school) in actual class situations in areas of physical fitness. Practical administration, analysis, and critical evaluation of various physical fitness testing batteries now in use with stress upon the implementation of those programs in schools. P, 6 units Education, 9 units Physical Education or one (1) year of teaching experience. 9:00-10:40. (June 13 - July 1.)

287s. Kinesiology (2) II — Tatum
Study of the origin, insertion, and function of musculature and its application to skill training and activity for the physically handicapped, and use in training-room techniques. P, two years coaching and teaching experience; or Zoo. 57. Also 6 units in Education and 6 units in Physical Education. Fee, $3. 7:30 - 8:40.

289. Elementary-School Physical Education (2) I — Roby
Methods of planning, organizing, and directing a modern physical education program in the elementary-school. P, 6 units of physical education and 6 units of education. 10:50 - 12:00.

294s. Foundations of Physical Fitness (2) I — Roby
Scientific basis for physical fitness, analysis of fitness programs, analysis of fitness tests, literature, research. P, Zoo. 57 or two (2) years teaching experience, 6 units of Education, 6 units in Physical Education. 7:30 - 8:40.

350s. Physical Fitness for Children and Youth (3) I — Barringer
Advanced training in the management and direction of Youth Fitness Programs, a continuation of P.E. 250s. Practical experience in use of various testing batteries, consideration of problems of implementation of the programs, study of the physical fitness needs of children and youth, survey and study of community potential in existing organizations, leadership and activity programs, and the production of materials which will serve as a guide for community youth inter-agency cooperation for "Operation Fitness U.S.A." A pilot effort in conjunction with the President's Council for Youth Fitness. 1:30 - 3:10. (June 13 - July 1.)

PHYSICAL EDUCATION FOR WOMEN

(Open to men and women)

Instructors Garner, Wynn

26e. Folk Dance (1) II — Garner
Basic folk dance activity, including American round, square, and international folk dances. 7:40 - 8:40.

26hs. Beginning Swimming (1) I — Wynn
Instruction for students with no swimming experience, and for those students with very little swimming experience. Physician's heart check required. Fee, $2, deposit, $1. 7:40 - 8:40.

89. Swimming and Diving Methods (2) I — Wynn
Theory, progressions and methods of teaching swimming, stroke analysis and perfection, and pool management. Physician's heart check required. Fee, $2, deposit, $1. 9:00 - 10:10.

105s. Intermediate Swimming (1) I — Wynn

Instruction for those students with some swimming experience to perfect their strokes: build endurance, and learn some diving. Physician's heart check required. Fee, $2, deposit, $1. 10:50 - 11:50.

110sC. Advanced Swimming (1) I — Wynn

Instructions for those students who have had the five basic strokes. More advanced strokes and diving will be introduced. Physician's heart check required. Fee, $2, deposit, $1. 10:50 - 11:50.

165. Elementary-School Physical Education (2) II — Garner

The organization and teaching of physical education activities for the elementary school. Open to all students registered in the College of Education. 10:50 - 12:00.

264. Supervision of Play and Playgrounds (2) II — Garner

Theories of play, methods of organization, administration, and management of playgrounds; discussion of equipment; study of methods of training playground supervisors and leaders. 9:00 - 10:10.

PHYSICS

Instructor Davis

2a-2b* Introductory Physics (4 - 4) I - II — Davis

An introduction to the fundamental principles of mechanical, thermal, acoustical, electrical, optical, atomic, and nuclear phenomena. P, 1 entrance unit in algebra and geometry. Fee, $2 each term. Lec. 7:00 - 8:30 M - F; Recit. 8:30 - 9:30 MWF; Lab. 9:30 - 11:30 MWF.

20.* Introductory Optics and Acoustics (3) I — Staff

A unified treatment of optics and acoustics from the viewpoint of scalar wave theory. P, 11, Math. 79b. Fee, $2. 10:50 - 12:30 MWF: Recit. 10:50 - 12:30 TTH; Lab. 1:30 - 3:30 M; Odd week of month 1:30 - 3:30.

130a.† Structure of Matter (3) II — Staff

Introduction to elementary particle, nuclear, atomic, and molecular theory. The microscopic physical properties of states of matter, liquid, gases, solids, and plasmas, as they are determined by miscroscopic structure. P, Math. 79b., C.E. 113 or Physics 11, E.E. 80 or Physics 15, Physics 20. 10:50 - 12:30.

* *Credit will be allowed for only one of the following: 1a, 1b or 2a, 2b or 11, 15 and 20 or 92.*

† *Credit is allowed for only one of the following: 130a - 130b or 150 or 232a - 232b.*

ROMANCE LANGUAGES

FRENCH

Instructor Cuneo

3a-3b. Intermediate French (4 - 4) I - II — Cuneo

P, 1b or 2 years of high - school French. 7:30 - 8:35 and 8:45 - 9:55. (Class meets twice daily.)

299. Special Problems (1 to 4) I, II — Staff

Hours to be arranged.

410. Thesis (2 to 8) I, II — Staff

Hours to be arranged.

SPANISH

Assistant Professors Anderson, Chambers, Davis
Instructor Allen

1As. Spanish Conversation for Beginners (O) I — Allen

Practice in Elementary Spanish conversation. Direct method. 9:00 - 10:10.

1a-1b Elementary Spanish (4 - 4) I - II — Allen, Chambers

In case of students in the College of Liberal Arts, degree credit in 1a is allowed only after completion of 1b, except as provided on page 222 of the Biennial Catalogue. 7:30 - 8:35 and 8:45 - 9:55. (Class meets twice daily.)

3a-3b. Intermediate Spanish (4 - 4) I - II — Davis, Anderson

P, 1b or 2 years of high - school Spanish. 7:30 - 8:35 and 8:45 - 9:55. (Class meets twice daily.)

75a-75b. Intermediate Composition and Conversation (2) I - II — Davis, Anderson

P, 3b or four years of high - school Spanish. Required of all majors in Spanish. 9:00 - 10:10.

104a-104b. Introduction to Spanish Literature (3 - 3) I - II — Chambers, Allen

P, 3b or 4 years of high - school Spanish. 10:50 - 12:30.

Ed. 220s. The Teaching of Foreign Languages in the Elementary School (3) I — Chambers

History of foreign language instruction in the elementary school. The place of foreign languages in the elementary-school curriculum. Determination of corpus, design of syllabus, and plan of presentation for an elementary school course in a foreign language. Discussion and demonstration of a monolingual method. Introduction of reading and writing, visual aids, laboratory techniques, sources of cultural information and bibliography. 7:00 - 8:40.

299. Special Problems (1 to 4) I, II — Staff

Hours to be arranged.

400. Research (2 to 4) I, II — Staff

Hours to be arranged.

410. Thesis (2 to 8) I, II — Staff

Hours to be arranged.

SCHOOL LIBRARY SCIENCE

Assistant Professor Bentz
Reference Librarian Higley

201. Literature for Children (3) I — Bentz

The history and development of children's literature with emphasis throughout on standards of evaluation and reading interest. Reading and analysis of books, particularly modern publications for: student interest, ability, and need, up to the junior high-school level. P, Ed. 151, and 6 units in English or American literature. Fee, $2. 7:00 - 8:40.

282. Organization, Cataloguing, and Classification of Materials (3) II — Higley

Purpose and principles of cataloguing and classification. The card catalogue, shelf list, filing, vertical files. Organization of materials for use, particularly in school libraries; weeding, maintenance, etc. P, Ed. 151. 9:00 - 10:40.

283. Book Selection (3) I — Bentz

Introduces the principles of book selection, acquisition policies, and the gathering of varied library materials; discussions of book clubs, literary prizes, book publishing, censorship, non-book materials, and weeding; study of important selection aids. Individual assignments include practice in reviewing, annotating, and evaluating books in oral and written form. P, Ed. 151. 10:50 - 12:30.

285. Literature for Adolescents (3) II — Bentz

Books, periodicals, and audio-visual materials of interest to students in junior and senior high-school, with emphasis on books and reading for recreation, pleasure, and developmental needs. Detailed study of selection aids for various types of materials. Reading guidance for average, retarded, and advanced students. P, 6 hours in education or psychology. 10:50 - 12:30.

DRAMA PRODUCTION

SECRETARIAL STUDIES

Professor Langen (Head of Department)
Assistant Professor Kidwell
Visiting Lecturers Asmus, Haines, Melson

2. Briefhand and Transcription (2) II — Kidwell
Fundamentals of rapid notetaking using abbreviated longhand. Designed for personal use or for minimum employment dictation. 10:50 - 12:00.

6. Elementary Typing (2) I, II — Asmus-Staff
For students with no knowledge of touch typing. Fee, $6 each term. 7:30 - 8:40.

7. Typing Review (1) I, II — Asmus-Staff
P, 6 or the ability to type 25 words per minute for five minutes or one year of high-school typewriting. Fee, $3 each term. 10:50 - 11.50.

74. Beginning Shorthand and Transcription, Part I (4) I — Kidwell
Fundamentals of Gregg shorthand, beginning dictation and transcription. P, 7 or ability to type 40 words per minute. Fee. $5. 7:00 - 9:15.

75. Beginning Shorthand and Transcription, Part II (3) II — Kidwell
Continuation of 74. P, 74 or ability to take dictation at 60 words per minute. Fee, $5. 7:00 - 8:40.

77. Adding-Calculating Machine Techniques (2) I, II — Langen-Staff
Theory and operation of common adding and calculating machines; actual solution of simple problems illustrating the theory of machine calculation; development of a reasonable degree of skill. Fee, $3 each term. 1st term: 10:50 - 12:00; 2nd term: 7:30 - 8:40.

272. Office Management and Control (3) II — Langen
Office management from the supervisory point of view. Analysis of functions of various office departments, their organization and management. Development and use of office manuals; selection, training, pay and promotion of office employees; controlling office expenses and measuring office efficiency; quality and quantity production standards. P, 9 hours of secretarial studies or business administration courses. 10:50 - 12:30.

292s. The Improvement of Instruction in Typewriting (2) I Asmus

Current methods and research in teaching typewriting. Review of current literature and analysis of teaching methods, procedures, and devices. Emphasis is on practical improvement of instruction in typewriting. P, Ed. 197c or equivalent. 9:00 - 10:40.

293s. The Improvement of Instruction in Office Practice (3) II Melson

Current techniques and procedures in teaching office practice, machines, and related areas. Acquaintanceship with latest developments in office equipment. Consideration of proficiency standards and plans for maximum classroom use of equipment. P, Ed. 197c or equivalent. 10:50 - 12:30.

Ed. 295bs. Business Education Workshop (1 - 2) I Langen, Haines

An informative and practical presentation on the content and organization of the various high-school business courses. The range of consideration will be from office and distributive education work-experience programs and certain of the skill and non-skill business courses. The program is not a methods course, but will emphasize the principle of comprehensive instruction relating to a broad background of business information, concepts, attitudes, economic significance, appreciations, and ideals, as well as current working experiences. Those outside the business area interested in guidance and counseling, as well as teachers of business subjects, will find the program of value. 1:30 - 4:10. (June 13 - 25.)

298s. Principles and Problems of Business Education (2) II Melson

A study of past, current and probably future business education practices and problems. 1:30 - 2:40.

SOCIOLOGY

Professors Mulligan (Head of Department), Klaiss
Associate Professor Shoults
Assistant Professor Yoshino
Instructors Hambenne, Officer, Rowen

1. Introduction to Sociology (3) I, II Officer, Hambenne

The basic concepts and principles of sociology; analysis of group behavior, social institutions, processes, and change. 7:00 - 8:40.

2. Social Problems (3) I, II Yoshino, Klaiss

Principal American social problems: crime, race, divorce, poverty, etc.; causes and methods of treatment. 9:00 - 10:40.

10. Education for Marriage (2) II Klaiss

A practical study of factors involved in courtship, selection, marital adjustments, parenthood. P, sophomore standing. (Does not apply on the sociology major.) 10:50 - 12:00.

40. Introduction to Social Administration (2) II Rowen

An over-all view of the background and functions of the major institutions, public and private, in the fields of public health and welfare, and labor. 7:30 - 8:40.

87. Criminology (3) I Shoults

Study of crime, criminals, and criminal behavior. 10:50 - 12:30.

222. Sociology of Minority Relations (3) I Yoshino

A critical approach to the social processes involved in minority relations in terms of race, caste, class, ethnicity, politics, and religion. The sources of minority attitudes; patterns of minority adjustment; trends in minority relations. P, 1 and 2, or 6 units of anthropology. (Identical with Anthro. 222.) 10:50 - 12:30.

240. Child Welfare Problems (2) I Rowen

Extent, causes and treatment of child welfare problems in the field of social work; child welfare agencies and services. P, 1 and either 138 or 6 additional units of sociology or psychology. 7:30 - 8:40.

241. Juvenile Delinquency (3) II Mulligan

Extent, causes, and control of juvenile delinquency. P, 1. 9:00 - 10:40.

253. Group Dynamics (3) II — Mulligan

Analysis of factors and processes of social groups. Deals with such problems as group leadership, group effectiveness, group goals, communication within groups, and their individual members. P, 1, and 3 additional units of sociology or Psych. 1a - 1b. (Identical with Psych. 253.) 1:30 - 3:10.

279. Culture and the Individual (3) I — Officer

A survey of the field of culture and personality and the processes through which the individual acquires culture P, Anthro. 276 or equivalent. (Identical with Anthro. 279.) 9:00 - 10:40.

288. Penology (3) I — Shoults

Punishment, treatment, and prevention of criminality. Sociological analysis of probation, parole, and the rehabilitation process. P, 1, 87. 9:00 - 10:40.

Ed. 297. Educational Sociology (2) II — Hambenne

The school as a social insttiution. The social functions of the school. The social processes, socialization, and stratification in education. The informal and formal systems, and the bureaucratic structure of the school. P, 1 or 2. 9:00 - 10:10. (Identical with Ed. 297.)

SPEECH

Instructors Dimmick, Jaffe
Graduate Assistant Emerick

2s. Principles of Speech (2) I, II — Jaffe, Emerick

An introduction tot he field of speech. Designed to develop confidence, poise, and clarity in the use of the body, voice, language, and thought through guided practice in speaking. Fee, $1.50. 7:30 - 8:40.

5. Voice and Diction (2) I, II — Jaffe, Emerick

Training the speaking voice and cultivation of its effectiveness, including articulation, pronunciation, and vocabulary. Fee, $1.50. 9:00 - 10:10. (Identical with Drama 5.)

ADMINISTRATION BUILDING

10s. Public Speaking (2) II — Emerick

The beginning course in public speaking, with emphasis upon organization of effective thinking and effective delivery. Required of all speech majors. P, 2 or by examination. 10:50 - 12:00.

274s. Speech Correction Workshop (6) I — Dimmick

A three-week intensive course in handling the speech and hearing problems in the classroom. Designed for the classroom teacher. P, junior standing. (June 13 - July 1.)

7:00 - 8:40	Speech and Hearing Problems in the Classroom*
9:00 - 10:40	Managing Speech and Hearing Problems in the Classroom*
10:50 - 11:40	Special Lectures
1:30 - 3:30	Clinical Observation and Practice

* *The first two weeks will be devoted to speech problems, and the third week will be devoted to hearing problems.*

299. Special Problems (1 to 5) I, II — Staff

Hours to be arranged.

400. Research (1 to 3) I, II — Staff

Hours to be arranged.

410. Thesis (2 to 4) I, II — Staff

Hours to be arranged.

WATERSHED MANAGEMENT

RANGE MANAGEMENT

Assistant Professor Wilson
Instructor Schmutz

218s. Range Field Studies (3) I — Wilson

A summer field trip designed to give students an opportunity to observe at first hand the practical application of the principles of range management and ecology. Study of grazing problems on forest, brush, and grass ranges; noxious plant-control methods, revegetation techniques. Fee, $60 (transportation). June 6 - 25.

228s. Principles of Range Management (2) I — Schmutz

History and management of ranges and range livestock; range administration, range surveys and ranch planning, multiple use and technical field problems. Fee, $5. (June 30 - July 16.) All day field trip, July 9, 1:30 - 3:55.

ZOOLOGY

Associate Professor Cockrum
Graduate Asssitants Bradshaw, Davis, Mitchell
Research Associate Gloyd

1a-1b General Zoology (4 - 4) I - II — Davis, Cockrum

An introduction course in the structure, function, development, and behavior of animals. 1a: Emphasis on a representative vertebrate and the invertebrates. 1b: Emphasis on zoological principles as illustrated by phylum Chordata. Fee, $10 each term. 8:10 - 9:20; Lab. 9:40 - 12:40.

12. Natural History of the Southwest (3) I — Gloyd

Elementary biology of the common animals and plants of the Southwest, including the poisonous animals dangerous to man. May not be used to meet group VI lower-division requirement. Fee, $5. 8:10 - 9:20; Demonstration 9:40 - 11:40.

40. Mammalian Anatomy (3) I — Bradshaw

The gross structure of mammals, using the cat as a laboratory example. P, 1a. Fee, $10. 8:10 - 9:20 MWF; Lab. 9:30 - 12:30.

57. Elementary Physiology (4) II — Mitchell
Physiology of the human body. Primarily for students in physical education, nursing, and the general undergraduate. Not open to zoology majors. P, 40 or 41. Fee, $10. 7:00 - 8:30; Lab. 9:30 - 12:30.

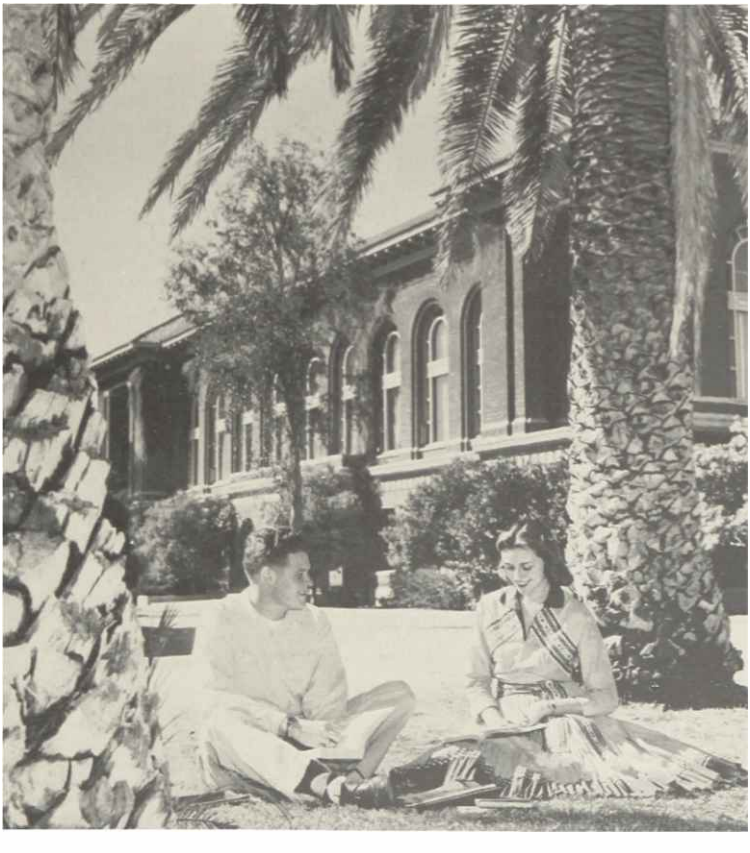
216. Zoogeography (2) I — Gloyd
Principles and concepts concerning the great regional patterns of distribution of the animals of the world, both past and present. P, 1b. 7:00 - 8:10.

299. Special Problems (2 to 4) I, II — Staff
Hours to be arranged.

400. Research (2 to 8) I, II — Staff
Hours to be arranged.

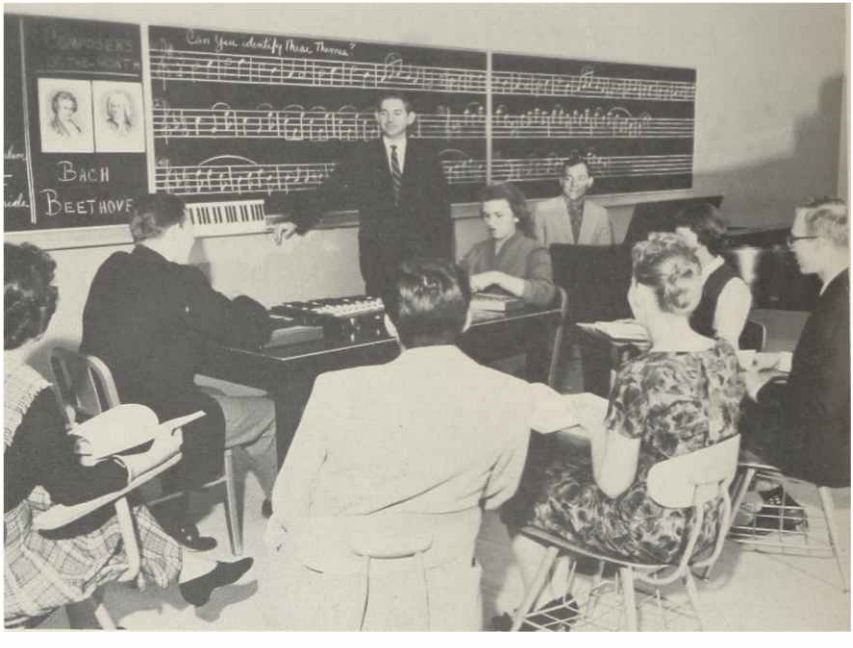
410. Thesis (2 to 8) I, II — Staff
Hours to be arranged.

420. Dissertation (1 to 9) I, II — Staff
Hours to be arranged.



STUDY UNDER THE PALMS

GRADUATE WORKSHOPS



Workshops Begin: June 13, July 18, July 27, August 15

BUSINESS EDUCATION

Coordinator: H. J. Langen, Ph.D.
Professor of Secretarial Studies and Business Education
The University of Arizona

Workshop in Content and Organization of Secondary Education Courses
Education 295bs: 1 - 2 units
June 13 - 25 — 1:30 - 4:10

The program will be an informative and practical presentation on the content and organization of the various high-school business courses. The content will include consideration of office and distributive education work-experience programs and certain of the skill and non-skill business courses.

The program is not a methods course; but it will emphasize the principle of comprehensive instruction ranging through a broad background of business information, concepts, attitudes, economic significance, appreciations, and ideals, as well as current working experiences.

Those outside the business area interested in guidance and counseling, as well as teachers of business subjects, will find the program of value.

VISITING CONSULTANTS:

Dr. Peter Haines, Michigan State University
Dr. Hamden Forkner, Columbia University
Dr. Joseph DeBrum, San Francisco State College
Dr. Ralph Asmus, Phoenix College
Mr. Eugene Dorr, Arizona State Supervisor of Distributive Education

DRAMA

Coordinator: Peter R. Marroney, M.A.
Professor and Head of the Department of Drama
The University of Arizona

Workshop in Drama
Drama 255s: 2 - 6 units
First term: June 13 - July 16
Second term: July 18 - August 20
9:30 - 12:00 with laboratory sessions in the afternoon.

This workshop will cover multiple assignments on play production activities, providing the student with varied and practical experiences in the arts and crafts of the theatre. A series of two to four summer productions of plays involved. P, 12 units in Drama. (May be repeated for a maximum of 12 units.)

EDUCATION

Coordinator: Milo K. Blecha, Ed.D.
Assistant Professor of Education
The University of Arizona

Workshop in Aviation Education
Education 228s: 3 units
July 18 - August 5
9:00 - 12:00

For elementary and secondary classroom teachers and school administrators. Preparation to aid pupils looking forward to careers in the air age and the predicted age of travel in space.

A general education approach to aviation, American air power, and the simple scientific principles of aviation. Orientation flights.

Preparation of curriculum materials at all grade levels. A 2-day symposium on rockets, missiles, satellites, and inter-planetary space travel. This course is designed to keep the teacher informed on recent developments, and to explore their significance.

VISITING CONSULTANTS:

Representatives of airlines, industry, Army, Navy, Air Force, and Civil Air Patrol.

EDUCATION

Coordinator: Milo K. Blecha, Ed.D.

Workshop in Science in Childhood Education
Education 223s: 3 units
June 13 - July 1
9:00 - 12:00

This workshop will feature scientific topics, problems, and experiments for elementary teachers from kindergarten through junior high school.

Program will include:

Mimeographed instructional materials.

Work with materials and concepts of science.

Discussions of the possible correlation of the science experiences of everyday living with the total school program.

Emphasis on improving practices, through self-identification with practical teaching problems in the area of science in childhood education with special reference to your school.

Opportunity to explore and view several elementary science exhibits.

VISITING CONSULTANT:

John Sternig, M.A., Assistant Superintendent in charge of Curriculum, Glencoe, Illinois.

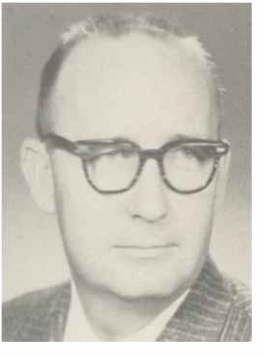
EDUCATION

Coordinator: Laura Ganoung, M.A.
Director of Special Education,
Tucson Public Schools
Tucson, Arizona

Workshop in Teaching Exceptional Children
Education 356: 6 units
First and second terms
Hours to be arranged.

Directed teaching and remedial practices in a public school, special school, or institution. This course follows in close sequence the class work in special education. P, 15 hours in special education and related graduate course work.

EDUCATION



Coordinator: Neil Sherman, M.A.
Consultant for Phoenix Elementary Schools, District No. 1

Workshop for the Education of
Migrant Children
Education 263s: 3 units
July 18 - August 5
1:30 - 4:30

This workshop will concentrate on exploration and development of the curriculum for children of migratory farm families of Arizona. Special attention will be given to: (1) learning more about children of migratory families, (2) analyzing problems of migrant children in relation to their education, and (3) developing curriculum materials that will aid teachers in teaching these children.

EDUCATION

Coordinator: David Wayne Smith, D.Ed.
Director of the Rehabilitation Program
The University of Arizona

Workshop on Counseling and Rehabilitation
of Handicapped Children and Adults
Education 200s: 3 units
July 18 - August 5
9:00 - 12:00

A course designed to acquaint counselors with problems of physically disabled individuals. The role to be played by the school counselor, teacher, school nurse, and agency personnel for the rehabilitated handicapped will be considered. Study will be made of pre-vocational evaluation techniques. Counseling techniques to be used with disabled individuals will be presented.

CONSULTANT:

Paul J. Danielson, Ph.D., Associate Professor of Education, The University of Arizona.

HOME ECONOMICS

Coordinator: Ruth A. Allen, M.S.
Associate Professor of Home Economics
The University of Arizona

Conference in Home Economics
Home Economics 257s: 2 units
June 13 - June 24
1:00 - 5:00

A course in new methods of clothing construction; to provide a basis for selecting construction techniques for various age groups; to give attention to problems of new fabrics; to assemble materials to aid in teaching of the subject.

SPEECH

Coordinator: Kenneth D. Dimmick, M.A.
Instructor in Speech
The University of Arizona

Workshop in Speech Correction
Speech 274s: 6 units
June 13 - July 1
7:00 - 8:40, 9:00 - 10:40, 10:50 - 11:40,
1:30 - 3:30

Primarily for elementary classroom teachers. Management of speech and hearing problems in the classroom, special lectures, clinical observation, and practice.

HOME ECONOMICS AND NURSING

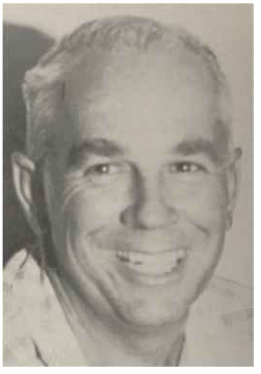
Coordinators: Pearl P. Coulter, M.S.
Director of the School of Nursing
The University of Arizona

And Ruth C. Hall, Ph.D.
Director of the School of Home Economics
The University of Arizona

Conference in Home Economics and Nursing
Home Economics 200s: 1 unit; or Nursing 200s: 1 unit
August 15-19
8:45 - 12:00 and 1:30 - 4:30

An intensive course dealing with the basic principles of communications and their application to some selected disciplines, such as, Nursing, Home Economics, and Business.

PHYSICAL EDUCATION



Coordinator: John Barringer, A.B.
Director of Health, Physical Education and Recreation
Tucson Public Schools,
Tucson, Arizona

Workshop in Physical Fitness for Children and Youth
Physical Education 250s: 3 units
9:00 - 10:40
June 13 - July 1
Physical Education 350s: 3 units
1:30 - 3:10
June 13 - July 1

A pilot program in cooperation with President Eisenhower's Council on Youth Fitness. A workshop program to meet the needs of elementary and secondary teachers and administrators, as well as those of professional physical education teachers.

VISITING CONSULTANTS:
Various resource personnel.

MUSIC

Coordinator: O. M. Hartsell, Ed.D.
Professor of Music
The University of Arizona

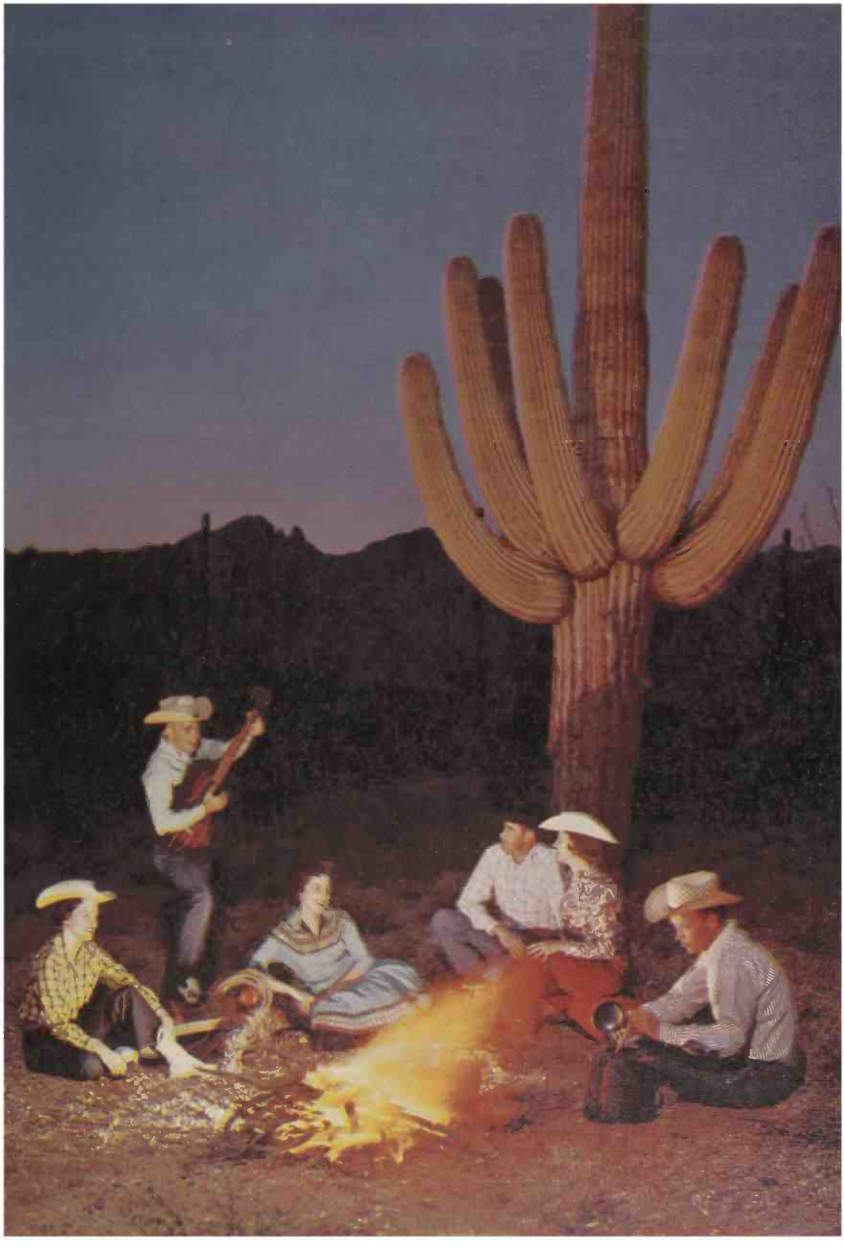
Workshop in Elementary Music
Music 370s: 3 units
June 27 - July 9
9:00 - 11:30 and 1:30 - 3:30

Open only to experienced classroom teachers, music supervisors, consultants, and directors of music who desire to obtain practical and usable information about quality education for children's musical growth and development. The course will: emphasize the most attractive teaching materials from many series of recent music texts; present activities which constitute a worth-while classroom music program; demonstrate how to teach and use the notational symbols of music with children; develop approaches for helping children to gain skill in listening to music; assist the classroom teacher in the autoharp and tuned bell blocks; enrich other musical activities; and enable each participant to learn a variety of singing games and dramatizations for use at both the primary and intermediate grade levels.

Assisted by — Anita K. Sammarco, M. A., Associate Professor of Music, The University of Arizona.

VISITING CONSULTANT:
Lilla Belle Pitts, Mus. D., Professor Emeritus of Music Education, Teachers College, Columbia University, New York City.

THE UNIVERSITY OF ARIZONA
TUCSON



SUMMER SESSION RECREATION PROGRAM

AT YOUR LEISURE . . .

SWIMMING	Pool in the Women's Building open seven days a week from 12:00 noon to 6:00 p.m. for recreational swimming for both men and women. Swimming tags issued by the University at time of registration. Because of inadequate facilities in men's dressing room, it is suggested men come to pool in swim suits.
GAMES	Table tennis and billiards available to all students. Student Union Building, small charge. Monday through Friday.
BROWSING LIBRARY AND MUSIC LISTENING ROOM	Monday through Friday, Student Union Building.
ART GALLERIES	Art Center, 325 West Franklin. Closed Sunday. Rosequist Galleries, 18 South Convent Avenue. Closed Sunday. Temple of Fine Arts, 330 South Scott Avenue. By appointment. Closed Sunday.
MINIATURE GOLF	Green Acres, 6118 East Speedway. Oracle Acres, 3538 North Oracle Road. Twin-Putt, 5151 East Speedway.

SPECIAL TOURS

Friday, June 24 — TRIP TO DISNEYLAND

Tour leaves main entrance of Liberal Arts Building, 1:00 p.m. Complete itenerary available at the Summer Session Office. Ticket, $35. (does not include meals). *Reservations must be made prior to June 16.*

Friday, July 8 — TRIP TO THE GUEST RANCH

Weekend stay at El Rancho Corona guest ranch, study in relaxed surroundings, or sun bathe, swim, play shuffleboard, or take guided horseback trail rides. Cost $32., all meals included. Leave Liberal Arts Building 1:00 p.m., Friday, return Sunday, 3:00 p.m. *Reservations must be made by June 30.*

Friday, July 29 — TRIP TO THE GRAND CANYON

Tour leaves main entrance of Liberal Arts Building, 1:00 p.m. First night spent in Flagstaff, all day Saturday spent touring Canyon with return to Flagstaff Saturday evening. Ticket, $25., include transportation by chartered motor coach and hotel accommodations at Flagstaff, but no meals. *Reservations must be made and fees paid at Summer Session office before July 20.* Tour limited to thirty-seven persons.

Friday, August 12 — TRIP TO GUAYMAS AND HERMOSILLO, OLD MEXICO

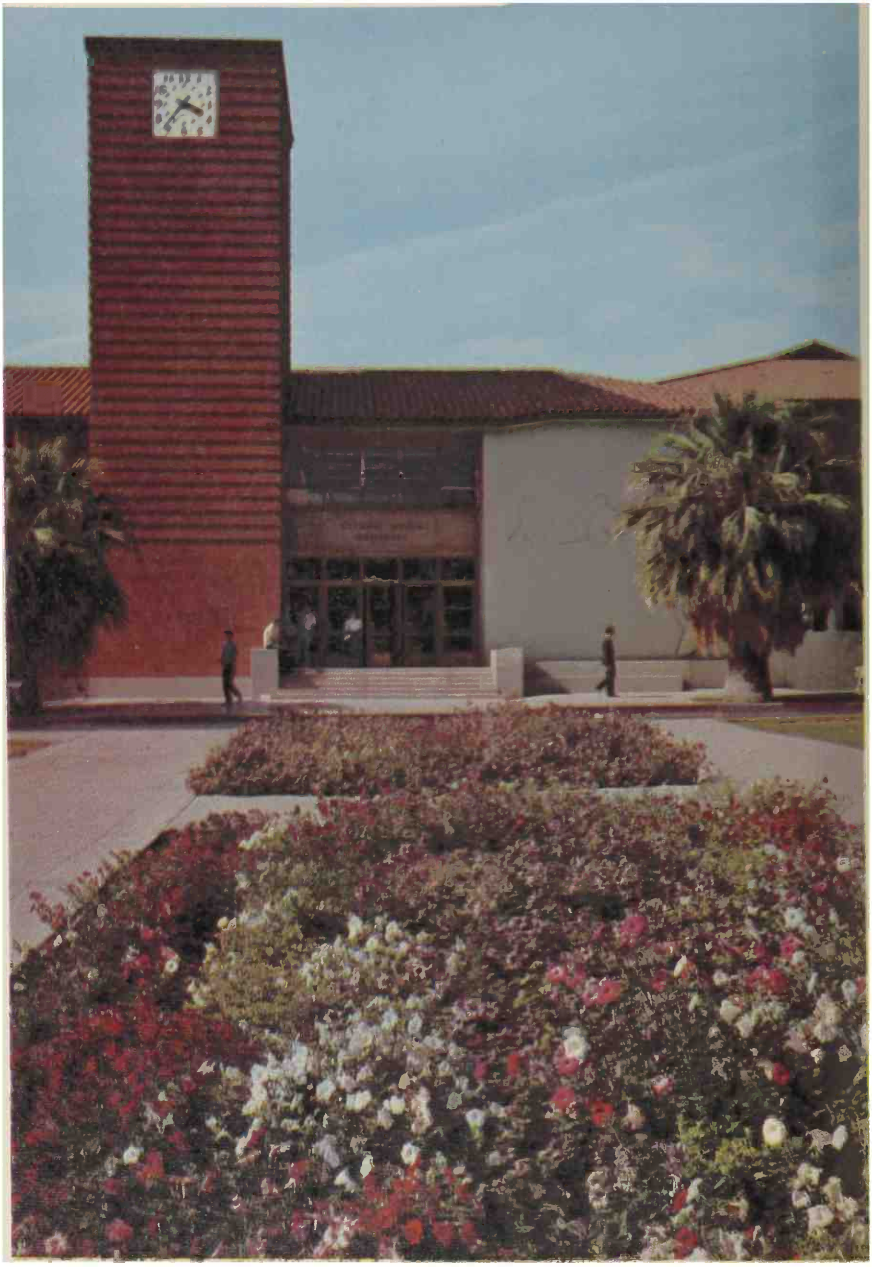
Tour leaves main entrance of Liberal Arts Building, 1:00 p.m. First night will be spent in Hermosillo, Old Mexico. Tour will leave Hermosillo at 11:00 a.m. Saturday for Guaymas. Swimming, fishing, and water sports available at Guaymas Beach. *Reservations must be made prior to August 4.* Ticket $27.50 (does not include meals).

THE SUMMER SESSION RESERVES RIGHT TO CANCEL TOURS IF A SUFFICIENT NUMBER DO NOT REGISTER FOR THEM.

SCHEDULE OF EVENTS

FIRST TERM

Sun., June 12	FILM, "CALL ME MADAM." Ethel Merman, as a lady ambassador, and Donald O'Connor star. Liberal Arts Auditorium, 7:00 p.m.
Mon., June 13	SUMMER SESSION DEAN'S RECEPTION. Mohave Hall, 7:30 p.m. Coffee and punch served on terrace. Music by Irving Coretz and the roving mariachis of Frank Quiroz.
Tues., June 14	DIRECTOR ROBERT CHURCH OF THE UNIVERSITY OF ARIZONA ART GALLERY CONDUCTS A TOUR THROUGH ONE OF THE UNIVERSITY'S NEWEST FACILITIES. Tour includes world-famous Kress Collection, and exhibit of American and European contemporary paintings. Tour begins at 7:00 p.m. Gallery located at corner of Speedway and Olive. Coffee and punch will be served.
Wed., June 15	FILM: "THE BRAVE BULLS." Mel Ferrar and Anthony Quinn star. Liberal Arts Auditorium, 7:00 p.m.
Thurs., June 16	DR. EDWIN F. CARPENTER, DEPARTMENT OF ASTRONOMY, WILL GUIDE TOURS THROUGH THE STEWARD OBSERVATORY and explain and demonstrate equipment. Observatory located east end of Campus. Free tickets must be obtained at the Summer Session office, Room 209, Education Building. Tours begin at 8:30, 9:00, 9:30 p.m.
Sat., June 18	TRIP TO TOMBSTONE AND BISBEE. Tombstone, "the town too tough to die," "Boothill Cemetery," and the "Bird Cage Theater." Bisbee area is one of the largest copper districts in America. Chartered motor coach will leave main entrance of Liberal Arts Building at 8:00 a.m. and return at 6:00 p.m. A luncheon stop will be made in Bisbee, Arizona. Register at Summer Session Office prior to June 17.
Mon., June 20	DR. PAUL E. DAMON, ASSOCIATE PROFESSOR OF GEOCHEMISTRY, GEOCHEMISTRY SECTION OF THE GEOCHRONOLOGY LABORATORY, LEADS INFORMAL AFTER-DINNER DISCUSSION ON GEOLOGIC TIME. Room 250, Student Union Building, 7:00 p.m. Coffee and punch.
Wed., June 22	FILM: "THE WAVE." Filmed in Mexico, English sub-titles. Liberal Arts Auditorium, 7:00 p.m.
Thurs., June 23	DR. DAMON, GEOCHEMISTRY, CONDUCTS TOUR OF THE GEOCHRONOLOGY LABORATORIES. 7:00 p.m., Room 310, Geology Building.
Fri., June 24	TRIP TO DISNEYLAND. (See SPECIAL TOUR SECTION.)
Sat., June 25	TRIP TO MOUNT LEMMON, HIGHEST PEAK IN SANTA CATALINA MOUNTAINS. Summerhaven near summit in midst of pine forests 9,000 feet above sea level. Chartered motor coach leaves main entrance of Liberal Arts Building at 12:00 noon, returns at 9:00 p.m. Stop at Bear Canyon for Western Cookout. Tickets, $ .75 at Summer Session Office must be purchased before Friday noon, June 24.
Mon., June 27	MRS. EDNA CHURCH AND ANDREW BUCHHAUSER, DUO-PIANISTS, PRESENT PROGRAM IN CROWDER HALL. 8:00 p.m.



Tues., June 28	MR. TED SMILEY, DIRECTOR OF GEOCHRONOLOGY LABORATORY, LEADS AFTER-DINNER DISCUSSION ON DATING PRE-HISTORY. Discussion in Room 250, Student Union Building, 7:00 p.m. Coffee and punch.
Wed., June 29	FILM: "THE TREASURE OF SIERRA MADRE." Humphrey Bogart and Walter Huston star. Liberal Arts Auditorium, 7:00 p.m.
Thurs., June 30	MR. SMILEY LEADS TOUR OF GEOCHRONOLOGY LABORATORY. Bus leaves main entrance of the Liberal Arts Building at 7:00 p.m.
Sat., July 2	TRIP TO OLD MEXICO, PATAGONIA, AND TUMACACORI MISSION. Nogales, Arizona, and Nogales, Sonora, are twin cities on the international border. Visitors may import $100. in merchandise duty-free. Foreign students must have their passports and visas in their possession before crossing the border. Patagonia was known to Indians as the "Enchanted Land," possibly because of the abundance of water and game. A stop will also be made at Tumacacori National Monument. Chartered motor coach leaves main entrance of Liberal Arts Building at 8:00 a.m. and returns at 6:00 p.m. Luncheon stop in Nogales, Arizona. MAKE RESERVATIONS AT SUMMER SESSION OFFICE BEFORE NOON, FRIDAY, JULY 1.

Tues., July 5	MR. EDWARD SAYLES, CURATOR OF THE ARIZONA STATE MUSEUM, GUIDES TOUR THROUGH OUTSTANDING COLLECTIONS. 7:00 p.m. Coffee and punch.
Wed., July 6	FILM: "DAVID AND BATHSHEBA," Susan Hayward and Gregory Peck star. Liberal Arts Auditorium, 7:00 p.m.
Thur., July 7	DR. BEN MARKLAND, DIRECTOR OF RADIO - TELEVISON BUREAU, LEADS AFTER-DINNER DISCUSSION. He will speak on Implications of Educational Television. Room 250, Student Union Building, 7:00 p.m. Coffee and punch.
Fri., July 8	VISIT TO GUEST RANCH. (See SPECIAL TOUR SECTION.)
Sat., July 9	TRIP TO MISSION SAN XAVIER DEL BAC, OLD TUCSON, AND ARIZONA SONORA DESERT MUSEUM. San Xavier, oldest of the early Spanish missions still in daily use as a church. Old Tucson, a replica of a 19th century western town, movie set, and concessions. The Arizona Sonora Desert Museum features a variety of living plants, and live animals, reptiles, and insects of Arizona and Sonora. Chartered motor coach leaves Liberal Arts Building 8:00 a.m. and returns at 1:00 p.m. MAKE RESERVATIONS AT SUMMER SESSION OFFICE BEFORE NOON, FRIDAY, JULY 8.
Tues., July 12	MR. DONALD FREEDMAN, NUMERICAL ANALYSIS, LEADS AFTER-DINNER DISCUSSION CONCERNING THE ROLE OF COMPUTERS. Room 250, Student Union Building, 7:00 p.m. Coffee and punch.
Wed., July 13	FILM: LIBERAL ARTS AUDITORIUM AT 7:00 p.m.
Thurs., July 14	MR. DONALD FREEDMAN, NUMERICAL ANALYSIS, CONDUCTS TOUR THROUGH UNIVERSITY'S NUMERICAL ANALYSIS LABORATORY. 7:00 p.m. in Engineering Annex. Features demonstration of the 650 Computer. Coffee and punch.

SECOND TERM

Tues., July 19	DR. NEIL SHERMAN, VISITING LECTURER IN EDUCATION, LEADS AFTER-DINNER DISCUSSION ON THE PROBLEMS OF EDUCATING MIGRANT CHILDREN. Room 250, Student Union Building, 7:00 p.m. Coffee and punch.
Wed., July 20	FILM: "THE FOUNTAINHEAD." Gary Cooper and Patricia Neal star. Liberal Arts Auditorium, 7:00 p.m.
Thurs., July 21	MR. DIRAN AKMAJIAN, TENOR, AND A PIANIST, PRESENT MUSICAL PROGRAM, 8:00 p.m. CROWDER HALL.
Sat., July 23	TRIP TO MT. LEMMON, HIGHEST PEAK IN THE SANTA CATALINA MOUNTAINS. Chartered motor coach leaves the main entrance of the Liberal Arts Building at 10:00 a.m. and returns at 4:00 p.m. MAKE RESERVATIONS AT SUMMER SESSION OFFICE BEFORE NOON, FRIDAY, JULY 22.
Tues., July 26	DR. WILLIAM CROOKSHANK, DIRECTOR OF SPECIAL EDUCATION, SYRACUSE UNIVERSITY, LEADS INFORMAL AFTER-DINNER DISCUSSION OF HANDICAPPED CHILDREN. Room 250, Student Union Building, 7:00 p.m. Coffee and punch.

Wed., July 27	FILM: LIBERAL ARTS AUDITORIUM, 7:00 p.m.
Thurs., July 28	DR. HELMER MYKLEBUST, PROFESSOR OF LANGUAGE AND PSYCHOLOGY, NORTHWESTERN UNIVERSITY, LEADS INFORMAL AFTER-DINNER DISCUSSION ON HANDICAPPED CHILDREN. Room 250, Student Union Building, 7:00 p.m. Coffee and punch.
Fri., July 29	TRIP TO GRAND CANYON (See SPECIAL TOUR SECTION).
Sat., July 30	TRIP TO SAGUARO NATIONAL MONUMENT AND COLOSSAL CAVE. 54,971 acres in best stand of giant saguaro cacti in world. Chartered motor coach leaves the main entrance of the Liberal Arts Building at 8:00 a.m. and returns 12:00 noon. MAKE RESERVATIONS AT SUMMER SESSION OFFICE BEFORE NOON, FRIDAY, JULY 29.
Tues., Aug. 2	MRS. JAMES P. MOORE, SECRETARY OF THE ARIZONA PIONEER HISTORICAL SOCIETY, LEADS INFORMAL AFTER-DINNER DISCUSSION. Room 250, Student Union, 7:00 p.m. Coffee and punch.
Wed., Aug. 3	FILM: "FRIC-FRAC." French comedy. Liberal Arts Auditorium, 7:00 p.m.
Thurs., Aug. 4	MRS. MOORE CONDUCTS TOUR THROUGH FACILITIES OF THE ARIZONA PIONEER HISTORICAL SOCIETY. 7:00 p.m., 949 East 2nd Street.
Sat., Aug. 6	TRIP TO GLOBE, MIAMI AND INSPIRATION MINE. Superb mountain scenery, stop at Inspiration Mine. Chartered motor coach leaves main entrance of Liberal Arts Building at 8:00 a.m. and returns at 6:00 p.m. Luncheon stop at Miami, Arizona. Register at Summer Session Office prior to August 5.
Tues., Aug. 9	MR. HOWARD BALDWIN, DIRECTOR OF THE APPLIED RESEARCH LABORATORY, LEADS AFTER-DINNER DISCUSSION. Mr. Baldwin explains program of Applied Research Laboratory. Room 250, Student Union Building, 7:00 p.m. Coffee and punch.
Wed., Aug. 10	FILM: "MY SIX CONVICTS." John Beal and Gilbert Roland. Liberal Arts Auditorium, 7:00 p.m.
Fri., Aug. 12	TRIP TO GUAYMAS AND HERMOSILLO, OLD MEXICO. (See SPECIAL TOUR SECTION).
Sat., Aug. 13	TRIP TO SAN XAVIER DEL BAC, OLD TUCSON, AND ARIZONA SONORA DESERT MUSEUM. (See July 9 program). Chartered motor coach leaves Liberal Arts Building 8:00 a.m. and returns at 1:00 p.m.
Tues., Aug. 16	MR. RAYMOND W. BLISS, SENIOR PHYSICIST, INSTITUTE OF ATMOSPHERIC PHYSICS, CONDUCTS TOUR OF SOLAR ENERGY LABORATORY. Bus leaves from front of Student Union, 7:00 p.m. and return at 8:30 p.m.
Wed., Aug. 17	FILM: "HIGH SOCIETY." Grace Kelly and Bing Crosby star. Liberal Arts Auditorium, 7:00 p.m.

seventy-fifth anniversary