ANNOUNCEMENT
FOR THE
ACADEMIC YEAR
1937-1938

Record of University Activities for the
Academic Year, 1935-1936

Twenty-five cents
PUBLISHED BY
University of Arizona
TUCSON, ARIZONA
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Course in mining eng

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Physical education for women
Health administration

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Trade and industrial educ
Expenses and fees

Courses of instruction
Interdepartmental courses
Concert series
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Agricultural economics
Agricultural engineering
Agronomy
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Anthropology
Art
Astronomy
Bacteriology
Botany
Chemistry
Civil engineering
Classical literature
Dairy husbandry
Dramatic art

Econ., soc., and bus. admin
Education
Electrical engineering
English
Entomology
French
Geology and mineralogy
German
Greek
History and political science
Home economics
Horticulture
Italian
Latin
Law
Mathematics
Mechanic arts
Mechanical engineering
Military science and tactics
Mining eng. and metall
Music
Philosophy and psychology
Physical education for men
Physical education for women
Physics
Plant breeding
Plant pathology
Poultry husbandry
Rhythms
Spanish
Speech
Zoology

Departments of research and extension
Agricultural Experiment Station
Agricultural Extension Service
Arizona Bureau of Mines
University Extension Division
Correspondence courses
Extension classes
Arizona State Museum
Steward Observatory
Affiliated institutions
Arizona State Laboratories
U.S. Bureau of Mines
Forest Service
Agr. Conservation Program

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UNIVERSITY CALENDAR

1937-1938

FIRST SEMESTER

September 13, Monday  University Faculty meeting.
September 13, Monday  Registration for Freshmen Week.
September 13, Monday to September 17, Friday  Freshman Week program.
September 17, Friday  Matriculation—all new students.
September 18, Saturday  Registration—old students.
September 20, Monday  Class work begins.
September 24, Friday  Applications for condition examinations filed with the Registrar.

September 25, Saturday  "A" Day—no classroom exercises.
October 2, Saturday  Condition examinations.
October 4, Monday  Last day of registration for credit.
October 21, Thursday  Records closed for preliminary scholarship report.

November 11, Thursday  Armistice Day—no classroom exercises.
November 18, Thursday  Records closed for mid-semester delinquent report.
November 24, Wed. eve to November 28, Sunday eve  Thanksgiving recess.
December 3, Friday  Applications for condition examinations filed with the Registrar.
December 11, Saturday  Condition examination.
December 18, Sat. noon to January 2, Sunday eve  Christmas recess.
January 22, Saturday to January 29, Saturday  Semester examinations.
SECOND SEMESTER

January 31, Monday  Registration of Freshmen, new students, and Seniors (morning); all other students (afternoon).
February 1, Tuesday  Class work begins.
February 15, Tuesday  Last day of registration for credit.
February 22, Tuesday  Washington’s Birthday — no classroom exercises.
March 3, Thursday  Records closed for preliminary scholarship report.
March 12, Saturday  Founders’ Day (classes are held).
March 31, Thursday  Records closed for mid-semester delinquent report.
April 14, Thurs. eve to April 24, Sunday eve  }Easter recess.
April 15, Friday  Applications for condition examinations filed with the Registrar.
April 23, Saturday  Condition examinations.
April 30, Saturday  Senior records complete except for second semester examinations.
May 6, Friday and May 7, Saturday  }University Week events (classes are held).
May 7, Saturday  1939 Seniors must have filed their applications for candidacy for degrees by this date.
May 18, Wednesday  Class work ends for advanced degree candidates.
May 26, Thursday  Graduate and Senior records closed.
May 27, Friday  Semester examinations begin.
May 29, Sunday  Baccalaureate Sunday.
May 30, Monday  }Senior Day — Honor Assembly.
May 31, Tuesday  }Observance Memorial Day — no examinations.
June 1, Wednesday  Alumni Day.
June 4, Saturday  Commencement.
June 4, Saturday  Semester examinations end.

SUMMER SESSION, 1938

First Term — June 13, Monday, to July 16, Saturday.
Second Term — July 18, Monday, to August 20, Saturday.
BOARD OF REGENTS

EX-OFFICIO

His Excellency, Rawleigh C. Stanford........................................Governor of Arizona

Hon. Herman E. Hendrix, Ph.D., State Superintendent of Public Instruction.

APPOINTED

Term expires

Hon. William O. Sweek, M.D.................................................................January, 1939

Hon. Jack B. Martin..............................................................................January, 1939

Secretary of the Board of Regents

Hon. Henry S. McCluskey.................................................................January, 1939

Hon. Everett E. Ellinwood, LL.B......................................................January, 1941

President of the Board of Regents

Hon. Halbert W. Miller, B.S. in Agr., M.S........................................January, 1941

Treasurer of the Board of Regents

Hon. Albert M. Crawford, B.S...........................................................January, 1943

Hon. William H. Westover, LL.B......................................................January, 1943

Hon. Elbert T. Houston.................................................................January, 1945
OFFICERS OF THE UNIVERSITY
OFFICERS OF ADMINISTRATION

Alfred Atkinson, D.Sc. (1937).*
President of the University.

Dean of the College of Mines and Engineering; Director of the Arizona Bureau of Mines.

Samuel Marks Feggly, Ph.B., LL.B. (1915).
Dean of the College of Law.

James Willis Clarson, Jr., Ph.D. (1921).
Dean of the College of Education; Dean of the Summer Session.

Emil Richert Riesen, A.M. (1918).
Dean of the College of Liberal Arts.

Raymond J. Leonard, Ph.D. (1926).
Dean of the Graduate College.

Dean of the College of Fine Arts; Director of the School of Music.

Paul Steere Burgess, Ph.D. (1924).
Dean of the College of Agriculture; Director of the Agricultural Experiment Station.

Charles Zaner Lesher, M.A. (1922).
Registrar; Secretary of the Faculty.

Rudolph H. Gjelsness, B.A., B.L.S. (1932).
Librarian.

Arthur Hamilton Otis, A.M. (1911).
Dean of Men.

Evelyn Wellington Jones, A.M. (1929).
Dean of Women.

James Fred McKale, M.A. (1914).
Director of Athletics and Physical Education for Men.

Director of the Arizona State Museum.

Director of the Steward Observatory.

Ina Estelle Gittings, M.A. (1920).
Director of Physical Education for Women.

Director of the Agricultural Extension Service.

Fred P. Perkins, M.D. (1927).
Director of Health; Medical Adviser.

Max Phillip Vosskuhler, M.S. (1921).
Director of the University Extension Division.

Elmer Jay Brown, Ph.D. (1916).
Director of the School of Military Science and Tactics.

B. Eleanor Johnson, Ph.D. (1934).
Director of the School of Home Economics.

Austin Chauncey Repp,† Ph.D. (1934).
Director of Appointments.

* Figures in parentheses indicate year of first appointment to the University.
† On leave 1937-38.
Oliver K. Garretson, Ph.D. (1930).
High School Visitor.

Francis Marion Walker. (1916).
Comptroller Emeritus.

Comptroller.

William Joseph Bray. (1908).
Superintendent of Buildings and Grounds.

Alter Louis Slonaker, M.A. (1922).
Graduate Manager of Student Body Activities; Alumni Secretary.

**UNIVERSITY COMMITTEES**

**1937-1938**

Admission—The Registrar, the deans of the several colleges.

Advanced Standing—The Registrar, the Dean of the College, and the Head of the Department concerned.

Advisory Council—The President, the Deans, the Registrar. Wed. 3:30.

Campus—Bray, Kinnison, Streets.

Catalogue—Lesher, Riesen, Solve.

Chamber Lectures—Graesser, Houghton, Mathewson, Pattison.

Educational—Solve, Clark, Kinnison, Sands, Schultz, Walker.

Gifts—Douglass, E. Jones, Pattison.

Graduate Study—Dean of the Graduate College, Chapman (Physical Sciences), Hawkins (Biological Sciences), Lowell (Arts), Pattison (Humanities), Walker (Social Sciences).

Health—University Physician, Directors of Physical Education, Dean of Men, Dean of Women.

Intercollegiate Athletics—Thomas, Kelton, Lesher, McKale, Nugent.

Library—Houghton, Ball, Rebell, Clark, Gjelsness, Larson, Streets, Thrift.


Residence Standing—Dean of Men, the Registrar, the Dean of Women, the Comptroller, J. B. McCormick.

Rhodes Scholarship—Schneck, Garretson, Nugent.

Schedule—The Registrar, Kinnison, Howard, M. Thornburg, Roy.

Special University Occasions—Lesher, Thomas, Pease.

Student Activities and Eligibility—G. T. Caldwell, Briggs, J. B. Cunningham, McKale, the Registrar, Dean of Men, Dean of Women.

Student Aid—Repp, E. Jones, Otis, Lesher, Slonaker, Wood, Bray, Herndon.

Summer Session—Clarson, Riesen, Lesher.

University Concert and Lecture Series—Andersen, Riesen, Lesher.

University Extension—Vosskuhler, Larson, Lesher, Pattison, Schmidt, Nichols.
OFFICERS OF THE UNIVERSITY

OFFICERS OF INSTRUCTION AND ADMINISTRATION

Altman, Elenore (1929). Professor of Piano.
Diploma from Royal Academy of Vienna, 1905; Artist Diploma from Institute of Musical Art, 1911. Pupil of Stojowski and Paderewski.

Andersen, Andreas S. (1935). Instructor in Art.
Art Institute, Chicago; Carnegie Institute, Pittsburgh; Diploma from British Academy, Rome.

Andersen, Arthur Olaf (1934). Dean of the College of Fine Arts; Director of the School of Music; Professor of Music Theory and Composition, and Head of the Department.
Mus.D., American Conservatory, 1934; nine years of study in Europe with Guiraut, Guilmant, and D'Indy in Paris; with Durra in Germany; and with Sgambatti in Rome.

Anderson, Ernest (1923). Professor of Chemistry, and Head of the Department.
B.S., Texas, 1903; M.S., Texas, 1905; Ph.D., Chicago, 1909.


Arnold, Joseph F. (1934). Instructor in Botany; Research Assistant in Range Ecology, Agricultural Experiment Station.
A.B., Colorado College, 1934; M.S., Arizona, 1936.

B.A., Arizona, 1933; M.A., Arizona, 1934.

Ball, Elmer Darwin (1928). Professor of Zoology; Entomologist, Agricultural Experiment Station.
B.S., Iowa, 1895; M.S., Iowa, 1898; Ph.D., Ohio State, 1907.

Barr, George W. (1930). Professor of Agricultural Economics; Head of the Department of Economics and Rural Sociology; Agricultural Economist, Agricultural Experiment Station.
B.S., Colorado Agricultural College, 1919; M.S., Cornell, 1921; Ed.D., California, 1928.


Boldyreff, Alexander W. (1930). Associate Professor of Mathematics.
B.S., Michigan, 1928; M.S., Michigan, 1927; Ph.D., Michigan, 1930.

Borgquist, Erasmus Swan (1926). Professor of Civil Engineering.
B.S., Utah, 1913; C.E., Utah, 1917.

Briggs, Ian Albert (1923). Associate Professor of Agronomy; Associate Agronomist, Agricultural Experiment Station.
B.S., Montana, 1922; M.S., Iowa, 1924.

Brockmeier, Mary F. Munds (1935). Instructor in Physical Education for Women.
B.A., Arizona, 1927; M.S., Southern California, 1933.

Brooks, John (1924). Professor of Spanish.
A.B., Harvard, 1917; Ph.D., Wisconsin, 1924.

Brown, Elmer Jay (1916). Director of the School of Business and Public Administration; Head of the Department of Economics, Sociology, and Business Administration; Professor of Business Administration and Economics.
B.S., Greenville College, 1908; M.A., Illinois, 1909; Ph.D., Illinois, 1911.
Brown, James Greenleaf (1909). Professor of Plant Pathology, and Head of the Department; Plant Pathologist, Agricultural Experiment Station.
B.S., Chicago, 1916; M.S., Chicago, 1917; Ph.D., Chicago, 1925.

Pasadena Community Playhouse; Chouinard Institute of Art.

Brown, Sydney Barlow (1928). Professor of French, and Head of the Department.
B.A., Oberlin, 1908; M.A., Yale, 1911; Docteur de L'Université de Montpellier, 1928.

Brown, Vinton Austin (1935). Assistant Professor of Physics.
B.S., Arizona, 1929; M.S., Arizona, 1931; Ph.D., California Institute of Technology, 1935.

Bryan, Walker Edward (1916). Professor of Plant Breeding, and Head of the Department; Plant Breeder, Agricultural Experiment Station.
B.S., Alabama, 1911; M.S., Wisconsin, 1915.

Buchly, Walter E., Major, Cavalry, U. S. Army (1933). Assistant Professor of Military Science and Tactics.
A.B., Stanford, 1913; Cavalry School, Fort Leavenworth, Kansas, 1922, 1929; Graduate Command and General Staff School, Fort Leavenworth, Kansas, 1931.

Buehrer, Theophil Frederic (1921). Professor of Agricultural Chemistry; Head of the Department of Agricultural Chemistry and Soils; Physical Chemist, Agricultural Experiment Station.
B.A., Texas, 1916; M.A., Texas, 1918; Ph.D., California, 1921.

Burgess, Paul Steere (1924). Dean of the College of Agriculture; Director of Agricultural Experiment Station; Professor of Agricultural Chemistry.
B.S., Rhode Island, 1910; M.S., Illinois, 1911; Ph.D., California, 1920.

Butler, Bert S. (1927). Professor of Geology; Head of the Department of Geology and Mineralogy.
A.B., Cornell, 1905; A.M., Cornell, 1907; Sc.D., Colorado School of Mines, 1929.

Butler, Gurdon Montague (1915). Dean of the College of Mines and Engineering; Director of the Arizona Bureau of Mines; Professor of Mining Engineering.

Butler, Karl D. (1934). Instructor in Plant Pathology; Assistant Plant Pathologist, Agricultural Experiment Station.
B.S., Arizona, 1932; M.S., Arizona, 1934.

Cable, W. Arthur (1925). Professor of Speech, and Head of the Department.
B.A., Manchester, 1920; Ph.B., Chicago, 1920; M.A., Iowa, 1925.

Caldwell, George Thornhill (1920). Professor of Zoology, and Head of the Department.
B.S., William and Mary, 1916; M.S., Chicago, 1923; Ph.D., Chicago, 1930.

Caldwell, Mary Estill (1919). Professor of Bacteriology, and Head of the Department.
B.S., Arizona, 1918; M.S., Arizona, 1919; Ph.D., Chicago, 1932.

Carpenter, Edwin Francis (1925). Professor of Astronomy, and Head of the Department; Assistant Director of Steward Observatory.
B.A., Harvard, 1922; M.A., Harvard, 1923; Ph.D., California, 1925.

Carrington, Herbert DeWitt (1924). Professor of German.
Ph.B., Yale, 1884; Ph.D., Heidelberg, 1897.
Chapman, Thomas Garfield (1916). Professor of Metallurgy and Ore Dressing; Head of the Department of Mining Engineering and Metallurgy; Metallurgist, Arizona Bureau of Mines.
S.B., Massachusetts Institute of Technology, 1909; Sc.D., Massachusetts Institute of Technology, 1923.

Chesney, Marguerite (1925). Associate Professor of Physical Education for Women; Assistant Director of Physical Education for Women.
B.A., Arizona, 1925; M.S., Columbia, 1929.

Clampitt, Audrey Camp (1928). Assistant Professor of Piano.
B.M., Iowa, 1923; M.A., Iowa, 1924.

Clark, James C. (1926). Professor of Electrical Engineering, and Head of the Department.

Clarson, James Willis, Jr. (1921). Dean of the College of Education; Dean of the Summer Session; Professor of Secondary Education.
B.S., Iowa State, 1918; M.A., Chicago, 1922; Ph.D., Chicago, 1926.

Colcaire, Oscar (1935). Associate Professor of Voice.
Pupil of Jean de Reszke, Nice; Battistinci, Rome; Tanara and Garbin, Milan; Martino, Rome; Witherspoon, New York.

Conrad, Frederick Allen (1922). Professor of Sociology.
B.A., Goshen College, 1912; M.A., Indiana, 1913; Ph.D., Stanford, 1932.

Cox, Mabel (1934). Retail Specialist.

Crooks, Donald M. (1935). Professor of Botany, and Head of the Department.
B.S., Ball State Teachers' College, Indiana, 1927; M.S., University of Chicago, 1929; Ph.D., University of Chicago, 1933.

Cummings, Byron (1915). Director of the State Museum.
B.A., Rutgers, 1889; M.A., Rutgers, 1892; Sc.D., Rutgers, 1924; LL.D., Arizona, 1921.

Cunningham, John Bissell (1925). Professor of Metallurgy and Ore Dressing.
E.M., Michigan, 1913; M.S., Michigan, 1931.

Cunningham, Walter Stanley (1914). Professor of Dairy Husbandry, and Head of the Department; Dairy Husbandman, Agricultural Experiment Station.
B.S., Purdue, 1909; M.S., Minnesota, 1928.

B.S., Louisiana State, 1906.

Curtis, Leonard J. (1921). Professor of Law.
B.S., Franklin University, 1889; J.D., Chicago, 1911.

Darrow, Lemuel DeWitt (1917). Professor of Mechanic Arts, and Head of the Department.
B.S., Kansas City University, 1909; LL.B., Kansas City Law School, 1912; M.A., Utah, 1915.

Darrow, Robert A. (1936). Instructor in Botany, and Assistant Range Ecologist.
B.S., New York State College of Forestry, 1932; M.S., Arizona, 1935; Ph.D., Chicago, 1936.

Davis, Richard Naaman (1919). Professor of Dairy Husbandry; Associate Dairy Husbandman, Agricultural Experiment Station.
B.S., Oklahoma A. & M., 1911; M.S., Minnesota, 1922.

* In residence first semester.
Douglass, Andrew Ellicott (1906). Director of Steward Observatory; Professor of Astronomy and Dendrochronology.
   B.A., Trinity College, 1889; Sc.D., Trinity College, 1908.

Dudley, Sarah Eleanor (1926). Associate Professor of English.
   B.A., Vassar, 1897; M.A., Columbia, 1907.

Eberling,* Frances (1925). Assistant Professor of Spanish.

Ehle, Mark (1917). Professor of Mining Engineering; Mining Engineer, Arizona Bureau of Mines.
   E.M., Colorado Mines, 1901.

Ellis, Willis Davis (1935). Assistant Professor of Philosophy and Psychology.
   B.A., California, 1924; M.A., California, 1927; Ph.D., California, 1930.

Embleton, Harry (1923). Professor of Poultry Husbandry, and Head of the Department; Poultry Husbandman, Agricultural Experiment Station.
   B.S., Cornell, 1912.

Enke, Fred (1925). Associate Professor of Physical Education for Men.
   B.S., Minnesota, 1921.

Ewing, Russell C. (1937). Assistant Professor of History.
   A.B., California, 1929; M.A., California, 1931; Ph.D., California, 1934.

Fegley, Samuel Marks (1915). Dean of the College of Law; Professor of Law.
   Ph.B., Northwestern, 1897; LL.B., Northwestern, 1900.

Finch, Alton H. (1931). Associate Professor of Horticulture; Associate Horticulturist, Agricultural Experiment Station.
   B.S., Oregon State, 1925; M.S., Iowa State, 1926; Ph.D., Wisconsin, 1929.

Fitz-Gerald, John Driscoll, II (1929). Professor of Romance Philology; Head of the Department of Spanish.

Forbes, Robert Humphrey (1894). Dean Emeritus of the College of Agriculture.
   B.S., Illinois, 1892; M.S., Illinois, 1897; Ph.D., California, 1916; Sc.D., Arizona, 1925.

Fowler, Frank Hamilton (1919). Professor of Classical Literature.
   B.A., Lombard, 1890; Ph.D., Chicago, 1896.

Frazier, Allegra (1916). Professor of English.

Fuller, Dorothy Van Arsdale (1928). Assistant Professor of English.


Garretson, Oliver K. (1930). Associate Professor of Secondary Education; High School Visitor.
   B.A., Oklahoma, 1918; M.A., Texas, 1928; Ph.D., Columbia, 1929.

Garrison, E. Alta (1936). Assistant Professor of Home Economics.
   B.Sc., Nebraska, 1923; M.A., California, 1930.

* On leave 1937-38.
A.B., Baker University, 1928; M.A., Arizona, 1932.

Giblings, Frank Tom (1926). Assistant Professor of Physical Education for Men.
B.S., Arizona, 1926.

Gillmor,* Frances (1934). Assistant Professor of English.

Gittings, Ina Estelle (1920). Director of Physical Education for Women; Professor of Physical Education for Women.
B.A., Nebraska, 1906; M.A., Arizona, 1924.

Gjelsness, Rudolph H. (1932). Librarian; Professor of Library Science.

Graesser, Roy French (1926). Associate Professor of Mathematics.

Gray, Laurence Roderick (1928). Associate Professor of Economics.
B.S., Southern Methodist, 1924; M.A., Michigan, 1928.

Greene, Robert Alva (1928). Director of Arizona State Laboratory; Assistant Professor of Bacteriology.
B.A., Arkansas, 1924; M.S., Oklahoma, 1926; Ph.D., Arizona, 1933.

B.S., Vermont, 1894; M.S., Vermont, 1903; Ph.D., Stanford, 1917.

Hale, Margaret Neal (1935). Instructor in English.
B.S., Southern California, 1932; M.A., Arizona, 1934.

Hamilton, Marie Padgett (1927). Associate Professor of English.

Hannum, Clair A. (1928). Assistant Professor of Zoology.
B.S., Washington, 1923; M.S., Washington, 1924.

Harvill, Richard (1934). Assistant Professor of Economics.
B.S., Mississippi State, 1926; M.A., Duke, 1927; Ph.D., Northwestern, 1932.

Haury, Emil W. (1937). Associate Professor of Anthropology, and Head of the Department.

Hawks, Ralph Sams (1919). Professor of Agronomy, and Head of the Department; Agronomist, Agricultural Experiment Station.
B.S., Kansas, 1914; M.A., Arizona, 1922; Ph.D., Wisconsin, 1932.


Herndon, J. Prugh (1923). Lecturer in Business Administration.
B.A., Arizona, 1919.

Herrick, George Fielden (1927). Associate Professor of Business Administration.
B.S., Northwestern, 1923; M.B.A., Northwestern, 1924.

Hinds, Hubert Bynum (1926). Associate Professor of Poultry Husbandry; Associate Poultry Husbandman, Agricultural Experiment Station.
B.S., Arkansas, 1920; M.S., Kansas State, 1926.

Houghton, Neal Doyle (1928). Professor of Political Science.
B.S., Missouri, 1923; M.A., Missouri, 1923; Ph.D., Illinois, 1927.

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* On leave second semester 1937-38.
Howard, Russell Marion (1920). Professor of Business Administration. 
B.S.C., Oregon State, 1914; M.S., Arizona, 1924.

Hubbard, Howard Archibald (1912). Professor of History; Head of the Department of History and Political Science. 
A.B., Ohio Wesleyan, 1904; M.A., Ohio Wesleyan, 1906; Ph.D., Michigan, 1923.

Jimerson, Harold Adelbert (1926). Assistant Professor of Mechanical Engineering. 
B.S., Kansas, 1926; M.S., Arizona, 1929.

Johnson, B. Eleanor (1933). Director of the School of Home Economics; Professor of Home Economics. 
B.S., Pittsburgh, 1920; A.M., Columbia, 1923; Ph.D., Chicago, 1931.


Jones, Evelyn Wellington (1929). Assistant Professor of Education; Dean of Women. 

Jones, Faye C. (1931). Associate Professor of Vocational Education in Home Economics. 
B.S., Purdue, 1926; M.A., Columbia, 1932.

Kelton, Frank Caleb (1907). Professor of Civil Engineering, and Head of the Department. 
B.S., Arizona, 1904; M.S., California, 1916.

Kinnison, Allen Fisher (1918). Professor of Horticulture, and Head of the Department; Horticulturist, Agricultural Experiment Station. 
B.S., Idaho, 1916; M.S., California, 1926.

Kitt, Katherine Florence (1924). Associate Professor of Art, and Head of the Department. 
B.S., Arizona, 1911; M.A., Arizona, 1928.

Klemmedson, Linne Daniel (1927). Professor of Agricultural Education; Head of the Department of Agricultural and Home Economics Education. 
B.S., Colorado Agricultural College, 1923; M.S., Colorado Agricultural College, 1927.

Kling, Virginia (1931). Assistant Professor of Physical Education for Women. 
B.A., Miami, 1927; M.S., Wellesley, 1929.

A.B., Western Reserve University, 1929; A.M., Western Reserve University, 1930; Ph.D., Western Reserve University, 1934.

B.S., Arizona, 1934; M.S., Arizona, 1935.

Kurath, William (1937). Associate Professor of German, and Head of the Department. 
B.S., Northwestern, 1925; M.A., Chicago, 1926.

Laffer, Norman Callender (1935). Instructor in Bacteriology. 
B.S., Allegheny College, 1929; M.S., Maine, 1932; Ph.D., Illinois, 1937.

Larson, Emil Leonard (1926). Professor of Education. 
B.S., Kansas, 1920; M.A., Columbia, 1923; Ph.D., Columbia, 1925.

* On leave 1937-38.
Leonard, Heman Burr (1915). Professor of Mathematics, and Head of the Department.
B.S., Michigan, 1895; Ph.D., Colorado, 1906.

Leonard, Raymond J. (1926). Dean of the Graduate College; Professor of Geology; Curator of Geology in State Museum.
B.S., Oregon State, 1923; Ph.D., Minnesota, 1926.

Lockwood, Francis Cummins (1916). Professor of English.

Lowell, John L. (1934). Assistant Professor of Music Theory.
B.F.A., Oklahoma, 1929; M.Mus., Eastman School of Music, 1932.

Lutrell, Estelle (1904). Consulting Librarian; Professor of Bibliography.

Lyndt, Mabel L. (1929). Assistant Professor of Home Economics.
B.S., Arizona, 1927; M.S., Arizona, 1929.


Matlock, Robert L. (1931). Associate Professor of Agronomy; Associate Agronomist, Agricultural Experiment Station.

Mattingly, Althea Elizabeth (1934). Instructor in Speech.

Mewborn, A. Boyd (1931). Assistant Professor of Mathematics and Physical Science.
B.S., Arizona, 1927; M.S., Arizona, 1933.

Miller, Nelle (1927). Assistant Professor of Mathematics.

Morgan, Florence Humphreys (1929). Assistant Professor of English.

Muir, A. Laurence (1935). Assistant Professor of English.
B.S., Oberlin College, 1929; Ph.D., Cornell, 1934.

Mundinger, Gerhard H. (1936). Instructor in German.
B.A., Arizona, 1936.

Murphy, Frank B., First Sgt., U. S. Army (1925). Assistant Instructor in Military Science and Tactics.

McCormick, Fred C. (1934). Assistant Professor of English.
C.E., Princeton, 1907; M.A., Arizona, 1933.

McCormick, James Byron (1926). Professor of Law.

Mckale, James Fred (1914). Director of Athletics and Physical Education for Men; Professor of Physical Education for Men.

Nichol,* Andrew Alexander (1924). Assistant Professor of Botany; Assistant Range Ecologist, Agricultural Experiment Station; Curator of Botany in State Museum.
B.S.A., Minnesota, 1925.

* On leave 1937-38.
Nichols, George Rupert (1922). Assistant Professor of Spanish.

Nicholson, Helen Schenck (1918). Professor of Spanish.
B.A., Vassar, 1907; M.A., Arizona, 1918; Ph.D., Stanford, 1934.

Nugent, Robert Logan (Feb., 1932). Associate Professor of Chemistry.

O'Connor,* Jack (1934). Assistant Professor of Journalism.
A.B., Arkansas, 1925; A.M., Missouri, 1927.

Oliver, G. A. (1933). Associate Professor of Physical Education for Men.
A.B., Southern California, 1930.

Otis, Arthur Hamilton (1911). Professor of French; Dean of Men.

Padgett, Emmie Gaines (1928). Instructor in English.
B.A., Greenville Woman's College.

Park, John Callaway (1926). Associate Professor of Civil Engineering.
B.S., Arizona, 1926; M.S., Iowa State, 1930.


Patrick, David L. (1934). Associate Professor of English.
A.B., Iowa, 1922; M.A., Stanford, 1926; Ph.D., Stanford, 1934.

Pattison, Sidney Fawcett (1918). Professor of English, and Head of the Department.

Pease, Rollin (1931). Professor of Voice, and Head of the Department.

Percy, Garret Douglas (1937). Assistant Professor of Classical Literature, and Head of the Department.
A.B., Toronto, 1929; M.A., Toronto, 1930; Ph.D., California, 1936.

West Point, 1913; Cavalry School, 1926; Command and General Staff School, 1927.

Picard, Joseph L. (1930). Assistant Professor of Physical Education for Men.

B.S., Arizona, 1935; M.S., Arizona, 1936.

Pistor, William J. (1934). Associate Professor of Veterinary Medicine; Associate Veterinarian, Agricultural Experiment Station.

Polk, Orval H. (1929). Assistant Professor of Electrical Engineering.
B.S., Colorado, 1927; M.S., Arizona, 1933.

Post, Anita Calneh (1913). Professor of Spanish.

* On leave 1937-38.
Pressley, Elias Hardin (1919). Professor of Plant Breeding; Associate Plant Breeder, Agricultural Experiment Station.
B.S., Clemson, 1914; M.S., Wisconsin, 1924.

Provinse,* John H. (1932). Assistant Professor of Anthropology; Curator of Anthropology in State Museum.
I.L.H., Chicago, 1925; Ph.B., Chicago, 1928; M.A., Chicago, 1930; Ph.D., Chicago, 1934.

Pultz, Leon Merle (1936). Assistant Professor of Botany; Assistant Botanist, Agricultural Experiment Station.
B.S., South Dakota State College, 1925; M.S., South Dakota State College, 1927; Ph.D., Chicago, 1929.

Purcell, Edwin Joseph (1935). Assistant Professor of Mathematics.
B.A., Arizona, 1929; M.A., Colorado, 1931; Ph.D., Cornell, 1932.

Rebell, Julia Marie (1920). Professor of Piano, and Head of the Department.
B.Mus., Chicago Musical College, 1918; M.Mus., Chicago Musical College, 1930. Pupil of Phillip, Paris; Ganz; Stojowski; Reuter; and Leginska.

Repp,* Austin Chauncey (1934). Associate Professor of Education; Director of Appointments.
B.A., Coe College, Iowa, 1916; M.A., Iowa, 1926; Ph.D., Iowa, 1923.

Riesen, Emil Richert (1919). Dean of the College of Liberal Arts; Professor of Philosophy.
B.A., Kansas, 1908; M.A., Kansas, 1912.

Roach, Franklin E. (1936). Assistant Professor of Physics and Astronomy.
B.S., Wheaton College, Illinois, 1927; M.S., Michigan, 1930; Ph.D., Chicago, 1934.

Roberts, Lathrop Emerson (1922). Professor of Chemistry.
B.S., Chicago, 1914; Ph.D., Chicago, 1919.


Ross, Robert (1936). Instructor in Band Instruments.

Roy, Francis A. (1934). Assistant Professor of French.
B.A., Saint Anne College, 1926; License ès Lettres, University of Paris, 1930; Ph.D., Wisconsin, 1934.

B.A., Arizona, 1931.

Sands, Lila (1924). Associate Professor of Chemistry.
B.S., Nebraska, 1919; M.S., Nebraska, 1920; Ph.D., Nebraska, 1924.

Schmidt, Andrew Becker (1922). Professor of Economics.
B.A., Oberlin, 1912; M.A., Oberlin, 1913.

Schneck, Maximilian R. (1930). Professor of Philosophy and Psychology, and Head of the Department.

* On leave 1937-38.
Schultz, Ernest John (1928). Professor of School Music, and Head of the Department.
B.S., Indiana, 1925; M.S., Northwestern, 1936.

Schwalen, Harold Christy (1917). Professor of Agricultural Engineering; Associate Agricultural Engineer, Agricultural Experiment Station.
B.S., Arizona, 1917; M.S., Arizona, 1925.

Scott, Everett Lee (1924). Professor of Animal Husbandry; Associate Animal Husbandman, Agricultural Experiment Station.
B.S., Colorado Agricultural College, 1923; M.S., Iowa State, 1924; Ph.D., Purdue, 1930.

Graduate of Art Institute of Chicago.

B.A., Oklahoma, 1924.

Shaw, Allen A. (1927). Associate Professor of Mathematics.
B.A., London, 1913; M.A., California, 1925; Ph.D., California, 1927.

Short, Maxwell Naylor (1931). Professor of Petrography.
B.S., California, 1911; Ph.D., Harvard, 1923.

Simley, Ole Andrew (1927). Associate Professor of Psychology.
B.A., Carlton College, 1919; M.A., Carlton College, 1920; Ph.D., Wisconsin, 1931.

Smith, Chester H. (1929). Professor of Law.
B.A., South Dakota, 1920; LL.B., South Dakota, 1921; S.J.D., Harvard, 1924.

Smith, George Edson Philip (1900). Professor of Agricultural Engineering, and Head of the Department; Agricultural Engineer, Agricultural Experiment Station.
B.S., Vermont, 1897; C.E., Vermont, 1899; D.E., Vermont, 1929.

Smith, Howard Vernon (1924). Associate Professor of Agricultural Chemistry; Associate Agricultural Chemist, Agricultural Experiment Station.
B.S., Illinois, 1923; M.S., Illinois, 1924.

Smith, Margaret Cammack (1925). Professor of Nutrition; Nutrition Chemist, Agricultural Experiment Station.
B.A., Minnesota, 1917; M.A., Columbia, 1918; Ph.D., Columbia, 1925.

Solve, Melvin T. (1928). Professor of English.
B.A., Oregon, 1918; Ph.D., Michigan, 1926.

Sougey, Zela Marie (1925). Assistant Professor of French.
B.A., Nebraska, 1922; M.A., Nebraska, 1925.

Stanley, Ernest Brooke (1920). Professor of Animal Husbandry, and Head of the Department; Animal Husbandman, Agricultural Experiment Station.
B.S., Montana, 1919; M.S., Iowa State, 1923.

Steenbergen,* William (1930). Assistant Professor of Agricultural Engineering; Assistant Agricultural Engineer, Agricultural Experiment Station.
B.S., Arizona, 1929.

Stoyanow, Alexander A. (1923). Professor of Geology.
M.A., Moscow, 1900; M.E., Petrograd, 1904; Ph.D., Moscow, 1906.

* On leave 1937-38.
Streets, Rubert Burley (1924). Associate Professor of Plant Pathology; Associate Plant Pathologist, Agricultural Experiment Station.
B.S., Montana, 1918; M.S., Wisconsin, 1922; Ph.D., Wisconsin, 1924.

Summers, Richard A. (1928). Assistant Professor of English.

Tanner, Clara Lee (1928). Assistant Professor of Anthropology.

Tetreau, Elzer Des Jardins (1935). Professor of Rural Sociology; Rural Sociologist, Agricultural Experiment Station.
B.A., Hamline University, 1915; M.A., Wisconsin, 1920; Ph.D., Wisconsin, 1930.

Thomas, Floyd E. (1929). Professor of Law.
B.A., Iowa, 1911; LL.B., Iowa, 1914; J.D., Iowa, 1924.

Thompson, Alvin Jerome (1935). Instructor in Mining and Metallurgy.
B.A., Arizona, 1927; M.S., Arizona, 1933.

Thornber, John James (1901). Professor of Botany; Botanist, Agricultural Experiment Station.
B.S., South Dakota, 1895; B.S., Nebraska, 1897; M.A., Nebraska, 1901.

Thornburg, Martin Lynn (1924). Professor of Mechanical Engineering, and Head of the Department.
B.S., Purdue, 1915; M.E., Purdue, 1922.

Thornburg, Paul Marcellus (1927). Associate Professor of Mechanical Engineering.
B.S., Purdue, 1924; M.E., Purdue, 1929.

Thrift, Inez Esther (1920). Associate Professor of English.

Tremblay, Napoleon J. (1932). Associate Professor of French.
B.A., St. Mary’s College, 1925; M.A., Brown, 1929; Ph.D., Brown, 1932.

Tucker, William John (1921). Professor of English.
B.A., Dublin, 1911; Ph.D., Gregorian University of Rome, 1913.

Vorhies, Charles Taylor (1915). Professor of Zoology; Head of the Department of Entomology and Economic Zoology; Economic Zoologist, Agricultural Experiment Station; Curator of Zoology in State Museum.
B.S., Iowa Wesleyan, 1902; Ph.D., Wisconsin, 1908.

Walker, John Franklin (1927). Professor of Educational Psychology.
B.A., Albion, 1896; A.M., Arizona, 1916; Ph.D., California, 1924.

Waltz, Waldo E. (1934). Assistant Professor of Political Science and History.
B.S., Missouri State Teachers College, 1924; A.M., Missouri, 1927; Ph.D., Illinois, 1936.

Wanous, Samuel J. (1934). Assistant Professor of Business Administration.
B.A., Wisconsin State Teachers College, 1928; M.A., Iowa, 1929.

Warner, Earle Horace (1922). Professor of Physics, and Head of the Department.

Wedel, Oswald H. (1927). Professor of History.
B.A., Arizona, 1923; M.A., Stanford, 1924; Ph.D., Stanford, 1927.

Wehrle, Lawrence Paul (1930). Assistant Professor of Entomology; Assistant Entomologist, Agricultural Experiment Station.
B.S., Kansas State, 1914; M.S., Kansas State, 1916; Ph.D., Cornell, 1924.
Wood, Elwin Grant (1924). Associate Professor of Economics.  
B.S., Washington State, 1916; Ph.D., Wisconsin, 1924.

Wood, Mary Adele (1935). Instructor in Institutional Management, and  
Manager of University Cafeteria.  
B.S., Arizona, 1922; M.A., University of Chicago, 1933.

Wright, Genevieve Brown (1927). Assistant Professor of Eurhythmics.  
B.S., Wisconsin, 1925; M.A., Arizona, 1933.

NONTEACHING MEMBERS OF THE STAFF

Arizona Bureau of Mines

Ph.B., Yale, 1905.

Heineman, Robert E. S. (1928). Mineralogist.  
B.S., Arizona, 1926; M.S., Arizona, 1927.

Wilson, Eldred Dewey (1918). Geologist.  
B.S., Missouri School of Mines, 1918; M.S., Arizona, 1922.

College of Education

Peak, George J. (1930). Assistant Supervisor of Practice Teaching.  
B.S., Missouri State Teachers College, 1918; M.A., Arizona, 1931.

Agricultural Experiment Station

B.S., Idaho, 1928; M.S., Kansas State College, 1930.

Breazeale, James Frank (1925). Research Biochemist in Co-operation  
with U.S.D.A.  
B.S., Clemson, 1898.

Foster, E. Osborn (1933). Assistant Agricultural Chemist.  
B.S., Arizona, 1931; M.S., Arizona, 1933.

Harris, Karl (1928). Associate Irrigation Engineer in Co-operation with  
U.S.D.A.  
B.S., Utah, 1923; M.A., Utah, 1925.

Hilgeman, Robert (1930). Assistant Horticulturist.  
B.S.A., Arizona, 1926.

B.S., Nebraska, 1914.


B.S., Kansas, 1909; M.S., George Washington, 1918.

B.S., Northwestern, 1917; M.S., Northwestern, 1922; Ph.D., Northwestern, 1930.

Smith, Justin Gardner (1935). Assistant Horticulturist, University Date Garden.  


Wharton, Malcolm Frederic (1924). Associate Horticulturist.  
B.S., Oregon, 1922; M.S., Oregon, 1923.
OFFICERS OF THE UNIVERSITY

Steward Observatory

B.A., Iowa, 1920; Ph.D., Yale, 1925.

STAFF OF AGRICULTURAL EXTENSION SERVICE

Administrators and Specialists


Ballantyne, Alando Bannerman (1916). Specialist in Rural Sociology.
B.S., Utah Agricultural College, 1926; M.S., Utah Agricultural College, 1930.

B.S., Kansas, 1909; B.A., Kansas, 1913.

Huber, Thelma (1936). Home Management Specialist.
B.S., Utah, 1928; M.S., Utah State Agricultural College, 1931.


Murphy, Mernice (1935). Extension Editor.
B.A., New Mexico Normal, 1926; M.A., New Mexico Normal, 1930.

Pickrell, Charles U. (1919). Director of the Agricultural Extension Service.
B.S., Arizona, 1917.

Rowe, Clyde F. (1927). Extension Specialist in Poultry and Dairying.
B.S., Oklahoma A. & M., 1923.

B.S., California, 1932.

Tate, Harvey F. (1935). Extension Horticulturist.
B.S., Clemson, 1923.

Watson, Margaret (1935). Extension Specialist in Clothing.
B.S., Kansas State Teachers College, 1918; M.S., Iowa State College, 1930.

B.A., Iowa State, 1915; M.S., Iowa State, 1918.

County Agricultural and Home Demonstration Agents

Armstrong, Sam Walter (1927). County Agricultural Agent, Gila County.
B.S.A., Oregon Agricultural College, 1921.

B.S., Purdue, 1917.

Bentley, Evalyn Annetta (1921). Home Demonstration Agent, Pima County.
B.S., Kansas State College, 1912; M.S., Oregon State College, 1931.


Bliss, A. Mark (1936). County Agricultural Agent, Cochise County. Willcox B.S., Colorado Agricultural College, 1925.


Draper, Fred (1931). Assistant County Agricultural Agent, Maricopa County. Phoenix B.S., Arizona, 1930.


Hobart, Charles (1936). Assistant County Agricultural Agent, Maricopa County. Phoenix B.S., Arizona, 1922; M.S., Iowa, 1926.


Rogers, David W. (1935). County Agricultural Agent, Apache County.
B.S., Brigham Young University, 1918; B.S.A., Utah Agricultural College, 1921.

Ryan, Grace (1920). Home Demonstration Agent, Maricopa County.
B.S., Nebraska, 1912; M.A., Chicago, 1930.

Turville, Edwin S. (1920). County Agricultural Agent, Yavapai County.

Virmond, Bertha J. (1925). Home Demonstration Agent, Cochise County.
A.B., Kansas, 1904.

ASSISTANTS IN ADMINISTRATION

Abercrombie, Elizabeth, B.A.
Publications Editor.

Anderson, John L.
Purchasing Agent.

Baker, Cleo B., R.N.
Night Nurse in the Infirmary.

Barnett, William G., B.A.
Bookkeeper.

Berry, Iona
Secretary in the College of Fine Arts.

Bocock, Helen, R.N.
Nurse in the Infirmary.

Bork, William, B.A.
Assistant in Visual Education.

Bruce, Ellen
Telephone Operator.

Bryan, Elmer, B.A.
Storekeeper in Chemistry.

Buggy, Muriel, R.N.
Nurse in the Infirmary.

Burgess, Emma K., M.A.
Head Resident of Maricopa Hall.

Campion, Nellie Boyle
Secretary in the Agricultural Extension Service.

Christianson, Marvin L., B.A.
Assistant to the Registrar.

Cloud, Frances, B.A.
Secretary in the Graduate College; Assistant Secretary in the College of Liberal Arts.

Cox, Henry C., B.L.S.
Circulation Assistant in the Library.

Cox, Katherine M.
Secretary in the College of Mines and Engineering.

Cross, Mary Ann, B.A.
Secretary in the School of Military Science and Tactics.
Davis, Winifred, B.A.
Secretary in the College of Liberal Arts.

Dean, Lila Elaine
Manager of the Mailing Bureau.

DeWolf, Hubert G.
Cashier.

Edwards, Clifford J.
Bookkeeper.

Eckert, Flora, M.S.
Head Cataloguer in the Library.

Fuller, Ruth Peirce, B.A.
Assistant in the Office of the President.

Getty, Justine, A.B.
Secretary to the Dean of Men.

Glenn, Dorothy
Stenographer in the Business Office.

Gordon, Howard F.
Manager of the Co-operative Book Store.

Guild, Mabel Aenella
Assistant Librarian.

Hagerty, Cordelia
Secretary in the College of Education.

Hancock, Margaret, B.S.
Secretary in the College of Agriculture.

Hart, Alberta Ann
Stenographer in the College of Agriculture.

Hart, Pearle
Assistant Alumni Secretary.

Hewlett, Ruth, B.A.
Catalogue Assistant in the Library.

Jeffries, Mary Iva
Stenographer in the Agricultural Extension Service.

Journey, Shielia, B.A.
Stenographer in the Agricultural Extension Service.

Kelsey, Eloise, B.A.
Reserve Book Room and Circulation Assistant in the Library.

Knickerbocker, Retta
Recorder in the Office of the Registrar.

Leeson, Anna M.
Assistant in the College of Mines and Engineering.

Longfellow, Mary W., A.B.
Secretary in Appointment Bureau.

Lutes, Sarah W., M.A.
Assistant Dean of Women.

McCaddon, Eleanor
Secretary in the Business Office.

McDonald, Wilbert L.
Property Custodian in the School of Military Science and Tactics.
OFFICERS OF THE UNIVERSITY

McNeely, LaDonne
Stenographer in Mailing Bureau.

Maisch, Frances, M.A.
Head Resident of Gila Hall.

Miller, Agnes S.
Stenographer in the Agricultural Extension Service.

Milligan, Louise M., B.A.
Reference Librarian.

Molson, Margaret
Stenographer in the Arizona Bureau of Mines.

Nielsen, Margaret, B.A.
Stenographer in the College of Agriculture.

O'Neal, Peggy
Clerk in the Office of the Registrar.

Onstott, Mary Brown, M.A.
Credentials Secretary in the Office of the Registrar.

Paylore, Patricia, M.A.
Serials Librarian.

Phillips, Donald E., B.A.
Manager of the Press Bureau.

Posner, Ben, B.S.B.A.
Secretary in the School of Business and Public Administration.

Preston, Jane G.
Office Assistant in Physical Education for Women.

Regan, Margaret Josephine, B.A.
Assistant Registrar.

Robert, Gertrude T., B.L.S.
Assistant to the Cataloguer.

Stevens, Margaret D., B.A.
Secretary in the College of Law; Law Librarian.

Taylor, Gula V.
Secretary to the Registrar.

Thain, Marion
Stenographer in Warehouse.

Toppel, Helen P., B.S.
Stenographer in the University Extension Division.

Van Buren, Harriet E.
Stenographer in the Business Office.

Walcutt, Myrilla, A.B.
Secretary to the President.

Williams, Marion B.
Stenographer in the College of Agriculture.

Woolis, Adabelle
Stenographer in the Agricultural Extension Service.
FARM SUPERINTENDENTS, AGRICULTURAL EXPERIMENT STATION

Aepli, David C.
Superintendent, Salt River Valley Experiment Farm.
Mesa

Richardson, F. W., B.S.A.
Superintendent of University Poultry Farm.
Tucson

Seamans, George H.
Superintendent, Yuma Valley and Mesa Farms.
Yuma

Wilson, C. D., M.A.
Superintendent of University of Arizona Farm.
Tucson

ASSISTANTS IN MAINTENANCE DEPARTMENT

Carson, W. F.
Watchman

Haskins, Tracy B.
Engineer

Saracco, Joseph
Repairman

Cooper, G. G.
Electrician

Higuera, Jose
Head Gardener

Senob, Walter
Steam Fitter

Cox, Fred
Painter

Judd, Dell
Storekeeper

Smith, John
Plumber

Davis, Glen
Repairman

Kelly, Henry
Garageman

Stewart, Harper
Plumber's Helper

Frey, Frank
Watchman

McCall, A. G.
Traffic Policeman

Wallace, Edward
Mail Carrier

Grimes, L. H.
Watchman

Werkheiser, Robert
Fireman
GENERAL INFORMATION

THE UNIVERSITY

The University of Arizona is an integral part of the system of public education established by and for the state. Its purpose, in the language of the organic law, is “to provide the inhabitants of this state with the means of acquiring a thorough knowledge of the various branches of literature, science, and the arts,” and, in so far as possible, a technical education adapted to the development of the peculiar resources of Arizona. In furtherance of this purpose, the College of Agriculture, the School of Home Economics, the Agricultural Experiment Station, the Agricultural Extension Service, the College of Education, the College of Law, the College of Liberal Arts, the School of Business and Public Administration, the College of Mines and Engineering, the College of Fine Arts, the School of Music, the Graduate College, the Arizona Bureau of Mines, the University Extension Division, the School of Military Science and Tactics, the State Museum, and the Steward Observatory have been organized. In creating the University the Legislative Assembly wisely unified under one management these various colleges and institutions of higher learning and investigation.

The general organization of the University is in accordance with the Act of Congress of July 2, 1862, known as the Morrill Act, creating the “Land Grant Colleges.” The details of its organization and government are regulated by the Act of the Legislative Assembly of the Territory of Arizona, passed in 1885, and subsequent acts of the Legislature.

THE BOARD OF REGENTS

The government of the institution is vested in the Board of Regents of the University of Arizona, a corporation consisting of the governor and the superintendent of public instruction of the state, ex-officio; and eight members appointed by the governor. Appointment is made subject to the advice and consent of the senate. The term of office is eight years, beginning on the date of confirmation by the senate, and continuing until the appointment of a successor. In case of a vacancy the governor fills the office by appointment. The board elects a presiding officer, who is president of the board. It also elects its own secretary and treasurer. The Board of Regents has power to control and manage the University and its properties, and to enact laws governing the University.

THE FACULTIES OF THE UNIVERSITY

The University Faculty is composed of the President and the faculties of the University; it conducts and regulates the general and special courses of instruction, and receives and determines all appeals from acts by the faculty of any college. The proceedings of the University Faculty are conducted according to the rules of order adopted by it, and every person engaged in instruction in the University may participate in its discussions. The right of voting, however, is confined to the administrative officers and members of the teaching staff above and including full instructors.
THE FACULTIES OF THE SEVERAL COLLEGES

The immediate government of the several colleges is entrusted to their respective faculties, each of which has its own organization and regulates its immediate affairs, subject to the approval of the University Faculty.

MAINTENANCE AND ENDOWMENT

The University is maintained by funds appropriated by the United States and by the State of Arizona.

Federal Support—By the provisions of the Morrill Act of 1890, the University receives annually from the United States the sum of $25,000 “to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic sciences, with special reference to their application in the industries of life, and to facilities for such instruction.” This Morrill Fund is duplicated by the Nelson Fund, created by the Act of March 4, 1907. In 1935 the combined Morrill-Nelson fund was increased to $70,000. The University receives from the same source, for the support of the Agricultural Experiment Station, $15,000 yearly from the Hatch Act of 1887 and $15,000 additional from the Adams Act of 1906. From the Purnell Act of 1925 the University receives $60,000 annually; from the Bankhead-Jones Act of 1935, $3,105.64. The sum of $115,470.48 for 1935-36 was the federal appropriation for the Agricultural Extension Service. The Land Fund—the University of Arizona receives annually about $20,000 from the 600,000 acres of public lands which have been allotted to it from the United States and from the state.

State Appropriation—The appropriation of the legislature for the year 1937-38 is $853,440.95.

Gifts and Endowments—The Douglas Endowment Fund was established by the gift of Dr. James Douglas of New York. The income from this fund is to be applied annually to the purchase of instruments of precision and research, or special apparatus for scientific instruction and education in the College of Mines of the University of Arizona.

The Freeman Endowment Fund was established through the gift of Dr. Merrill P. Freeman. The proceeds of this fund are to be used for “the development of men and women.”

HISTORY

The act of the Legislative Assembly authorizing the formation of the University of Arizona was passed in 1885. By 1890 three of the departments for which it provided—the College of Agriculture, the College of Mines and Engineering, and the Agricultural Experiment Station—were organized, and in 1891 the University was opened to students, with a faculty of eight professors and instructors. Only thirty-one students, all told, matriculated in that year, and only nine of these were of college rank. All departments at that time were housed in the Old Main Building.

From these beginnings in pioneer days the University advanced slowly for the first twenty years of its history. The enrollment in the Preparatory Department exceeded that in the University proper, and the number of University graduates was never more than ten a year.

This long germinal period was followed by a decade of rapid expansion. The territory had become a state; high schools had multiplied, and the Preparatory Department was accordingly closed. The attend-
ance in the University increased eightfold in ten years. New depart-
ments were formed, the Faculty was enlarged, and campus improve-
ments on a larger and more permanent scale were begun with the erec-
tion of Arizona Hall and the Agriculture Building, for which appropri-
ations were made in 1911 and 1912 respectively. The swimming pool,
the Mines and Engineering Building, Mechanic Arts Building, the
Berger Memorial Fountain, Maricopa Hall, the Steward Observatory,
and Cochise Hall were built in quick succession. The College of Letters,
Arts, and Sciences, subsequently renamed Liberal Arts, was established,
and the several colleges segregated under individual deans and faculties.

In the year 1917, the University of Arizona was placed on the ac-
ccredited list of the North Central Association of Colleges and Secondary
Schools as a degree-granting institution. The Association of American
Universities placed the University of Arizona on its list of approved
colleges in November, 1924. In December, 1931, the College of Law was
admitted to membership in the Association of American Law Schools.

A building program involving construction of eleven new buildings
and remodeling of others, with an expenditure of $1,491,818, obtained
through the Public Works Administration of the United States govern-
ment and authorized by act of a special session of the State Legislature
was carried out through the years 1935-36 and 1936-37. The buildings
which were designed by Roy W. Place, Architect, of Tucson, are of Lomb-
bard Romanesque style with variations and include the Humanities
(classroom) Building, the Arizona State Museum Building, the Physical
Science Building, the Women’s Building, the Infirmary, the Adminis-
tration Building, the University Auditorium, the R.O.T.C. Stables, the
Greenhouses, and two new halls for women, Gila Hall and Yuma Hall.

LOCATION AND CLIMATE

The University of Arizona is situated at Tucson, Arizona, a city of
60,000 inhabitants, on the main line of the Southern Pacific Railway.
The city lies in a broad valley at an altitude of 2,400 feet and is sur-
rrounded by rugged mountains.

Climatic Advantages—Its dry, mild, and equable climate has made
Tucson a winter resort unsurpassed for healthfulness. The mean maxi-
mum temperature for the year is 78.8 degrees and the mean minimum
temperature is 50 degrees. Little rain falls during the winter; fogs are
all but unknown; cloudy days are rare. The percentage of sunshine
throughout the year is over 85 per cent of possible sunshine. The rela-
tive annual humidity is 45 per cent and the average precipitation for
the nine months of the academic year is 5.7 inches. Owing to the ex-
treme dryness of the air the highest temperatures known are less op-
pressive to the senses and less dangerous to the health than is the sum-
mer heat of the upper Mississippi Valley states. These conditions insure
to students a wide range of outdoor recreation throughout the college
year.

Advantages of Location for Students of Agriculture—The situation
of the University is favorable for students of agriculture. Tucson has
many irrigated farms in its neighborhood, is near the great range coun-
try of southern Arizona, and occupies a central position with relation
to the agricultural activities of the state. The University has kept pace
with the growing interest and investment in agriculture in Arizona and
has adapted its instruction and research in this science to the special
needs of the state.

Advantages for Students of Anthropology and Archaeology—The Uni-
versity of Arizona is located in the midst of the country occupied by
the prehistoric pueblo peoples of the great Southwest. In her immediate
vicinity lie the ruined villages of the ancient valley and mesa pueblo peoples. In the central and northern parts of the state are found the remains, not only of valley and mesa pueblos, but also the extensive ruins of the cliff pueblo people. In all parts of the state are found the living tribes of the primitive people of America, still pursuing their avocations and living in the simple style of primitive men. Students of ethnology find the region an exceedingly interesting and fruitful field of investigation. Stretching to the south are the ruins of the ancient peoples of Old Mexico. With the opening of the direct line of the Southern Pacific of Mexico Railway, which connects Tucson with Guadalajara and the City of Mexico, the wonderful ruins of the ancient cities of Mexico are brought within easy reach of the students of the University of Arizona. Climatic conditions are favorable for field work throughout the entire year, and no other institution is able to provide so extensive an outdoor laboratory for the investigation of prehistoric America and the study of her surviving tribes as does the University of Arizona.

**Advantages of Location for Students of Astronomy**—In natural advantages the University, with all southern Arizona, is most highly favored by a climate which is perhaps the best in the United States for astronomical observations. The fine weather day after day, the quietness of the air at night, and the freedom of the winters from snow, all contribute to a consequitiveness of observations day by day such as is found practically nowhere else, and to a perfection of the atmospheric conditions that renders possible the most exacting work.

**Advantages of Location for Students of Engineering**—Because of its situation in the neighborhood of great mines, the University offers exceptional advantages to the students of mining engineering, affording them the opportunity of seeing the actual operation of mines and the development of great enterprises, while carrying on the theoretical and experimental work of the mining course. As Tucson is a railroad center of importance and the engineering headquarters for several lines of the Southern Pacific system, the students of civil engineering are also provided with a field for observation and vacation employment. The equable winter climate makes field work in surveying and geology possible and pleasant throughout the college year.

**GENERAL UNIVERSITY FACILITIES**

**Grounds**

The University campus, comprising 75 acres, is situated upon high ground in the northeast part of Tucson. The campus, commanding on every side a view of mountain ranges, is laid out in drives, lawns, and gardens, with a large number of palm, olive, ash, umbrella, pepper, bagote, cottonwood, cedar, cypress, juniper, casuniana, eucalyptus, arbor vitae, and athol trees.

The University has its own water supply system for fire protection, irrigation, laboratory, and domestic purposes. The water is drawn from deep wells, with a capacity of 1,500 gallons a minute, and is of exceptional purity, chemically and bacteriologically.

**Buildings**

**Old Main** (1891), the oldest of the University buildings, contains recitation rooms and general offices of the School of Business and Public Administration, the Graduate College: departments of Mathematics, History and Political Science, French, Art, the State Laboratory, the University Mailing Bureau, and the Co-operative Book Store.
Pima Hall (1892), a co-operative dormitory, provides accommodations for thirty women, and has sleeping porches, in addition to well appointed parlors and living rooms.

College of Fine Arts (1900) houses the College of Fine Arts offices and the School of Music.

Herring Hall (1903) is the gift of the late Dr. James Douglas and his associates of the Copper Queen Consolidated Mining Company, through Col. William Herring, after whom it was named at the suggestion of Doctor Douglas. It will be remodeled for the use of the College of Fine Arts.

The University Dining Hall (1904) provides boarding accommodations for all persons living on the campus.

The Liberal Arts Building (1909) provides quarters for the offices of the Dean of the College and six of its departments, also for three lecture rooms and for the laboratories in bacteriology, psychology, and zoology.

Arizona Hall (1912), a men's dormitory, accommodates forty-four students and is thoroughly modern, both in materials and equipment.

Agriculture Building (1915), a commodious building of brick and reinforced concrete, provides quarters for the College of Agriculture, the Agricultural Extension Service, and offices for the U. S. Forest Service.

Agricultural Hall (1915), having a seating capacity of five hundred, accommodates University meetings and student assemblies. Its stage, when opened on the patio between the wings of the Agriculture Building, completes an open-air theater seating about twelve hundred.

The Mechanic Arts Building (1917), a brick and wood structure, provides exceptionally commodious quarters for the shops, as well as an office, finishing room, locker and wash room, and stock room.

The Mines and Engineering Building (1919), a large building of brick, reinforced concrete, and terra cotta, provides classrooms, drafting rooms, laboratories, and offices for the College of Mines and Engineering, the United States Bureau of Mines Experiment Station, and the Arizona Bureau of Mines.

Maricopa Hall (1919) provides accommodations for 113 women, and has parlors, living rooms, and sleeping porches.

The Berger Memorial Fountain (1919), the gift of Alexander Berger, is a memorial to the sons of the University of Arizona who sacrificed their lives in the World War.

The Steward Observatory (1921), built of white glazed brick and terra cotta, stands on the highest part of the campus, to the east of the other buildings.

Cochise Hall (1922), a men's dormitory, provides accommodations for 140 students, and, like other dormitories, includes sleeping porches.

The University Library (1925), modern Renaissance in design, is a three-story building of red, rug-faced brick, trimmed in terra cotta, covering a ground area of 195 by 110 feet. It is of steel frame construction with reinforced concrete floors and roof slabs, the latter covered with Spanish tile. The reserved book room and the adjoining outdoor reading room seat 155. The main reading room on the second floor, including the alcoves for periodicals and special collections, seats 290. There are fifteen seminar rooms on the third floor. The steel stack room affords space for the shelving of 225,000 books, and is capable of further expansion.

The Men's Gymnasium and Armory (1926) on the east side of the campus, is a modern, well equipped building 120 by 220 feet in size. In 1929 a swimming pool of standard size for aquatic contests was added.

The Law Building (1929), a structure of red brick and Bedford limestone, contains classrooms, a modern courtroom, faculty offices and conference rooms, a commodious reading and study room, and ample stack room space in which is housed the Law Library. The original
structure, built in 1904, for many years prior to remodeling housed the University Library.

The Stadium (1929) has a seating capacity of eight thousand. In the stadium building are quarters for visiting athletic teams, the University student publications, the Department of Art, and the museum and offices of the Arizona Pioneers Historical Society.

The Baseball Stadium (1929) has a seating capacity of 1,400.

The Storehouse and Garage (1932), a brick structure, houses offices and facilities for the receipt, storage, and distribution of University supplies and quarters for the motor transport service.

The Greenhouses not only provide laboratories for work in horticulture, plant breeding, and plant pathology, but also furnish plants and flowers for the ornamentation of the buildings and grounds.

The Central Heating, Light, and Power Plant is equipped to care for the heating and electrical service of the campus.

The Practice House, formerly used as an infirmary, will be utilized by the School of Home Economics for training girls in home management.

The Nursery School is used by the School of Home Economics as a laboratory for child-development work.

The Arizona State Museum (1936) is housed in a new two-story building of red brick trimmed with terra cotta and having a floor area of 76 by 140 feet. It also contains classrooms and office space for the Anthropology Department.

The Humanities Building (1936), a two-story building 60 by 176 feet, includes eighteen classrooms and two large lecture rooms seating three hundred each.

The Women's Building (1936), a two-story structure, 116 by 116 feet, with an outdoor swimming pool, contains offices, recitation rooms, locker rooms, a gymnasium, 60 by 92 feet, for the Department of Physical Education for Women, and a student recreational hall which includes a dance hall, bowling alleys, and a soda fountain.

The Chemistry-Physics Building (1936), with three stories and a floor space 87 by 160 feet, houses the departments of Physics and Chemistry.

The Administration Building (1936), a three-story building, 62 by 90 feet, houses administrative offices and the College of Education.

The University Auditorium (1936), 140 by 206 feet, has a seating capacity of about 2,800.

The Infirmary (1936), a one-story building 56 by 120 feet, has a capacity for twenty-four beds with general and isolation wards and private rooms.

The R.O.T.C. Stables (1938) have space for ninety-two horses, four months' supply of hay and grain, saddle rooms, and offices.

Yuma Hall (1937) provides accommodations for 142 women. The building is equipped with sleeping porches, social and directed-study rooms, and a walled outside patio. Elevator and room telephone service are provided.

Gila Hall (1937) provides accommodations for 156 women and is similar in construction and equipment to Yuma Hall. In this building are located the offices of the Dean of Women and the Associated Women Students.

LIBRARY

The University Library, housed in the Library Building, contains the General Library, the Agricultural Library, and the Freeman Collection of Arizoniana.

Accessions—The Library contains about 100,000 accessioned volumes, 12,000 federal documents, and several thousand unbound bulletins and
reports. About 1,000 serials are received by purchase, gift, and exchange. Of these the back files show 335 complete sets and 300 runs of workable value. In addition to the accessions acquired by purchase, the Library as a depository receives the documents and publications of the United States government, Arizona state documents, the publications of the Carnegie Institution, and a large number of university exchanges.

The Law Library, which was opened in 1915, is now housed in the Law Building and contains 12,000 bound volumes. It comprises nearly all the Anglo-American case material, including the English statutes and a considerable body of American statute law, complete sets of the leading law periodicals, and a carefully selected collection of textbooks and works of legal, historical, and philosophical import.

The Agricultural Library—The Agricultural Experiment Station Library of about 6,500 volumes contains the publications of the U. S. Department of Agriculture, complete sets of U. S. State Experiment Station bulletins and reports, together with the card catalogues indexing these sets. It also receives currently many reports from foreign agricultural bureaus, annual volumes of American Herd Books, and about 150 agricultural serials.

The Arizona Bureau of Mines Library—A working library is being established gradually in connection with the Arizona Bureau of Mines. In addition to the standard mining handbooks, much local material is being collected and about twenty-five journals are received chiefly in exchange for the bulletins of the Bureau. This material is catalogued and is accessible to the specialist upon application.

The United States Document Collection—The University Library, designated a depository in 1907, received a gift from the Carnegie Public Library of Tucson of its entire run of documents. Since the Public Library was made a depository in 1885, this transference added many valuable documents to the University set, bringing the total number to about 12,000 volumes.

The Freeman Collection—This collection, assembled by the late M. P. Freeman of Tucson, for many years a Regent of the University of Arizona, contains about 1,000 volumes, dealing chiefly with the history of Arizona, New Mexico, and Old Mexico.

Special Collections—A general collection of works descriptive of Arizona, those by Arizona writers, and those with Arizona imprints, is growing constantly in value. There is also a collection of books by modern Mexican writers.

These two special collections in the Library are indexed and described by the following Library publications:

A bibliographical list of books, pamphlets, and articles on Arizona.

Mexican Writers—A list of books, pamphlets, and articles on Mexico with synopses and biographical notes.

The Holme collection includes the personal art library of Frank Holme, founder of the Bandarlog press, comprising books and periodicals dealing with illustrations and original drawings and cartoons by Holme and other artists of the late nineteenth century.

Withdrawal of Books—The Library is for the use of University officers and students. Books not held in reserve for special reasons are allowed to go out for home use in accordance with the published regulations. See Students’ Handbook.

Loans—The Library undertakes to serve not only the University, but the state at large. Books that can be spared from the University are loaned to other libraries, to superintendents and principals of Arizona schools, and to other properly accredited residents of the state engaged in systematic study.
STEWARD OBSERVATORY

The Steward Observatory is a gift to the University from the late Mrs. Lavinia Steward, of Tucson. The mounting of the large reflecting telescope, weighing several tons, was made by the Warner and Swasey Company, of Cleveland. The large circular disk of glass, 6 inches thick and weighing some 800 pounds, from which the principal mirror was ground, was cast by the Spencer Lens Company, of Buffalo, and the mirror has the distinction of being the first ever to be cast in this country. It is thus the precursor of the few larger telescopes which have been under construction in recent years. The telescope produced its first photographs in 1922, but some of the auxiliary equipment was not completed until later.

An integral part of the work of the Observatory is a long investigation of the climatic history of the Southwest by means of the records left in the growth of trees—an investigation which started many years before the founding of the Observatory. Most of the laboratories containing the important, especially designed pieces of apparatus for this work are not located in the Observatory building. While all the equipment of the Observatory, both astronomical and climatological, is definitely designed for research, the Observatory houses the Department of Astronomy, and its equipment is freely accessible both to elementary and advanced students.

STATE MUSEUM

The Arizona State Museum, established by law as an integral part of the University, is maintained as an educational factor in the institution and in the state. Its chief aim is to present the life history of Arizona and the great Southwest. Its archaeological collections emphasize the conditions and the achievements of the ancient cave, cliff, and pueblo peoples of the region and its ethnological collections present the manufactured products of the various modern Indian tribes. Its natural history collections show the bird life of the state and present many other forms of animal existence. Through gifts and exchanges with other museums and by purchase, the museum has secured numerous specimens representing other lands and other ages of culture. Thus it is possible to gather in Arizona not only a rich collection representing the southwestern United States, but also sufficient material from other regions to have a reasonable basis of comparison with other lands. The museum occupies an attractive building located near Third Street, a main entrance to the campus. (See page 229.)
ADMISSION

GENERAL REQUIREMENTS FOR NEW STUDENTS

Age—All applicants for admission to the University must be at least sixteen years of age.

Character—All new students are required to furnish satisfactory evidence of good character, and a certificate of graduation or of honorable dismissal from the school last attended.

Health—Each year all students are required to report to the University Physician for physical examination. Following such examination a statement certifying to good health or to such disability as need not affect the student's membership in the University must be submitted within three weeks after the student registers.

ADMISSION TO FRESHMAN RANK

Application for Admission—Formal application for admission to Freshman standing may be made by submitting a statement of high-school credits and recommendation of the principal on the University certificate of recommendation, Form R-54, issued by the office of the Registrar.

All applicants for admission to Freshman rank in the University shall have completed the equivalent of a four-year-high-school course; that is, 15 units of high-school or other secondary-school work in acceptable subjects.

Admission on Certificate

The University admits without examination recommended graduates of approved Arizona high schools presenting certificates showing them to have completed with satisfactory scholarship the courses prescribed for admission.

This transcript of high-school credits should in all cases be sent by the high-school officer to the Registrar of the University by August 1 for first-semester or January 1 for second-semester registration.

Admission by Examination

Students lacking satisfactory credentials will be examined on the work required for admission on Thursday and Friday, September 9 and 10. Application for such examination should be made not later than Saturday, August 7.

Admission from Other States

Credentials from high schools and preparatory schools in other states, accredited by the state universities of such states, will, when accompanied by the recommendation of the principal, and showing evidence of thoroughly satisfactory scholarship records, excuse candidates from examinations in subjects covered by such credentials. It is provided, however, that in any case the applicant must be eligible, in so far as scholarship is concerned, for admission to his own state university.

Summary of Admission Units

The 15 units offered for admission must include the following requirements common to all colleges of the University, together with any addi-
tional subject-matter requirements that may be specified by the college
in which the student desires to register:

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition and Literature</td>
<td>3</td>
</tr>
<tr>
<td>Algebra</td>
<td>1</td>
</tr>
<tr>
<td>Plane Geometry</td>
<td>1</td>
</tr>
<tr>
<td>Science, with laboratory work</td>
<td>1</td>
</tr>
<tr>
<td>United States History and Civics</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>8</td>
</tr>
</tbody>
</table>

Total: 15 units

Entrance Requirements by Colleges

The following table lists the number of units required in each of the
subjects specified for entrance to the several colleges:

<table>
<thead>
<tr>
<th></th>
<th>Agric.</th>
<th>Liberal Arts</th>
<th>Educ.</th>
<th>Law</th>
<th>Mines</th>
<th>Fine Arts</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language (one subj.)</td>
<td>2t</td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>History and Civics</td>
<td>1</td>
<td>1</td>
<td>College</td>
<td>College</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Algebra</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>of</td>
<td>of 1½</td>
</tr>
<tr>
<td>Geometry</td>
<td>1</td>
<td>1</td>
<td>Edu-</td>
<td>Law</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Science (Lab.)</td>
<td>1</td>
<td>1</td>
<td>cation</td>
<td></td>
<td>Physics</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Admission from Arizona High Schools

The high schools of the state are classified in three divisions—namely,
North Central Association High Schools, Class A High Schools, and
Class B High Schools. Recommended graduates of these schools are
accepted into full Freshman standing without examination under the
foregoing provisions governing admission.

North Central Association High Schools

The following schools are members of the North Central Association
of Colleges and Secondary Schools and meet the standards set up by
that Association:

- Ajo
- Bisbee
- Benson
- Buckeye Union
- Casa Grande Union
- Chandler
- Clarkdale
- Clifton
- Douglas
- Duncan
- Flagstaff
- Florence Union
- Gilbert
- Glendale Union
- Globe
- Hayden
- Holbrook
- Jerome
- Kingman
- Marana
- Mesa Union
- Miami
- Nogales
- Phoenix Union
- Peoria
- Prescott
- Ray
- Safford
- Scottsdale
- Snowflake Union
- St. Johns County
- Union
- Superior
- Tempe Union
- Thatcher
- (Gila College)
- Tombstone Union
- Tucson
- Willcox Union
- Williams
- Winslow
- Yuma Union

* Must be other than introductory or general science.
† A high-school unit is understood to stand for one study pursued satisfactorily five
times a week for a minimum of thirty-six weeks.
‡ Two units of vocational agriculture or vocational home economics may be substituted for 2 units of foreign language in meeting the entrance requirements to the
College of Agriculture or the School of Home Economics.
§ Must be other than introductory or general science.
|| It is recommended that candidates for admission to the College of Mines and En-
gineering offer 1 unit of credit in chemistry in addition to the required unit in
physics.
† Credit in high-school music to a maximum of 4 units will be accepted from such
high schools in the state as have been accredited in music by the University
through the Inspector of High School Music. See “School of Music.”
Class A High Schools

The following schools are fully accredited by the University as meeting the regulations and standards prescribed for such recognition:

- Bowie
- Coolidge Union
- Fort Thomas Union
- Litchfield Park
- Moreno
- Patagonia Union
- Round Valley (Eagar)
- San Simon
- St. David
- Tolleson Union
- Wickenburg

Class B High Schools

Certain schools which because of size, buildings, personnel, or other reasons do not fully meet the standards set up for Class A schools, but which are nevertheless providing satisfactory instruction to a small group of students, are rated as Class B schools. This rating means that graduates of these schools who otherwise meet the requirements for admission will be accepted into full Freshman standing upon the personal recommendation of the principal of the school from which they came.

CLASS B PUBLIC HIGH SCHOOLS

- Apache Union (McNary)
- Ashfork
- Camp Verde
- Gila Bend
- Northern Yuma County (Parker)
- Pearce Union
- Seligman
- Coolidge Union

CLASS B PRIVATE HIGH SCHOOLS

<table>
<thead>
<tr>
<th>School</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evans School</td>
<td>Tucson</td>
</tr>
<tr>
<td>Fresnal Ranch School</td>
<td>Tucson</td>
</tr>
<tr>
<td>Ganado Mission School</td>
<td>Ganado</td>
</tr>
<tr>
<td>Hacienda del Sol</td>
<td>Tucson</td>
</tr>
<tr>
<td>Jokake School for Girls</td>
<td>Phoenix</td>
</tr>
<tr>
<td>Loretta Academy</td>
<td>Bisbee</td>
</tr>
<tr>
<td>Loretta Academy</td>
<td>Douglas</td>
</tr>
<tr>
<td>Mesa Ranch School</td>
<td>Mesa</td>
</tr>
<tr>
<td>Southern Arizona School for Boys</td>
<td>Tucson</td>
</tr>
<tr>
<td>St. Joseph's Academy</td>
<td>Prescott</td>
</tr>
<tr>
<td>St. Joseph's Academy</td>
<td>Tucson</td>
</tr>
<tr>
<td>Arizona Academy</td>
<td>Phoenix</td>
</tr>
<tr>
<td>George Judson School for Boys, Inc.</td>
<td>Phoenix</td>
</tr>
</tbody>
</table>

SCOPE OF ADMISSION REQUIREMENTS

English

- English—3 units. (1) English composition.—The requirements in grammar and composition are: A thorough knowledge of the essentials of English grammar, habitual correctness in spelling, punctuation, sentence structure, paragraphing, and ability to make unified and coherent outlines and to write accurately and clearly on familiar subjects. (2) English classics.—The classics to be studied in preparation for college English are divided into two classes, those intended for thorough study and those intended for general reading. Preparation in the former class should cover subject matter and the leading facts in those periods of English literary history to which the prescribed books belong. In the latter class, the student should secure general knowledge of the subject matter and of the lives of the authors. In exceptional cases an equivalent amount of reading and study in other than prescribed works will be accepted.

For thorough study Shakespeare's *Macbeth* or *Hamlet*; Milton's *Comus*, *L'Allegro*, and *II Penseroso*, or selections from Book IV of Palgrave's *Golden Treasury*, with special attention to Wordsworth, Keats, and Shelley; Burke's Speech on Conciliation with America, or Washington's
Farewell Address, Webster's First Bunker Hill Oration; Macaulay's Life of Johnson or Carlyle's Essay on Burns, with a brief selection from Burns's poems.

For general reading and practice, selections will be made, at the discretion of the teacher, from groups I-V of College Entrance Requirements in English.

History

To meet the requirements in history the student should have acquired a knowledge of events as presented in any of the standard textbooks. There is required further an interpretation and analysis of these events, which include an understanding of the causes and results of any movement, and an appreciation of the various influences acting in the development of an institution.

Ancient History, to the year A.D. 800—1 unit
Medieval and Modern History of Europe—1 unit
History of England—1 unit
History and Government of the United States—1 unit

Mathematics

Algebra—1 unit. The work required in algebra covers the usual fundamental subjects and extends into graphical representation and quadratic equations, etc., as given in standard texts, such as Hawkes-Luby-Touton, New First Course in Algebra, or Wells-Hart, Modern First Year Algebra, or Longley and Marsh, Algebra, Book One, or Schorling-Clark, Algebra, Ninth School Year.

Advanced Algebra—½ unit for a half year of work on quadratics and beyond. In the College of Mines and Engineering, students are required to present this ½ unit for entrance.

Plane Geometry—1 unit for a year of work. The requirement is based on the work outlined in textbooks such as Wentworth-Smith, Young-Schwartz, or Hart-Feldman, Plane Geometry, with special references to original exercises and notebook work.

Solid Geometry—½ unit for a half year of work. Original exercises and notebook work are required. In the College of Mines and Engineering, students are required to present this ½ unit for entrance.

Plane Trigonometry—½ unit for a half year of work. Students who have taken this course in high school and who have had more than 15 acceptable entrance units may receive 2 college units for Mathematics 24 upon passing an examination at one of the times set for condition examinations. The examination may require the solution of given oblique triangles, and of trigonometric identities and equations. A special examination fee of $2 is required.

Languages

Greek*—2 units. Two years of high-school work covering the usual beginner's course and the reading of four books of Xenophon's Anabasis.

Latin*—2, 3, or 4 units. (1) Elementary Latin—2 units. The two years of high-school work should give the ability to read with considerable ease ordinary Latin prose and to translate into Latin easy English sentences. (2) Advanced Latin—1 unit. The reading of six orations of Cicero or an equivalent with prose composition. (3) Advanced Latin—1 unit. The reading of six books of Virgil's Aeneid.

* The courses offered should include the text named or an equivalent. Two years of one language must be presented, but one or more years of a second language will be accepted as elective.
German*—2 units. Two years of high-school work covering the usual beginner's course and the reading of the following or an equivalent: Storm's Immensee, von Millern's Hocher als die Kirche, Meyer-Foerster's Karl Heinrich, Schiller's Wilhelm Tell.

French*—2 units. Two years of high-school work, covering the following texts, or an equivalent: Aldrich, and Roulé, French Grammar; Méras, Les Petits Contes de France. Composition and oral practice. Reading of Daudet, Le Petit Chose.

Spanish*—2 units. Two years of high-school work. Elements of Spanish grammar of which the minimum amount should be articles; plurals; gender; agreement; possessives; demonstratives; objective personal pronouns; uses of ser and estar, haber and tener, para and por, of preterite and imperfect; subjunctive in main subordinate clauses; verbs, regular and irregular; radical and orthographic changing—ten tenses indicative and six subjunctive.

Note—Students who have completed two years of a language in high school and desire to continue the subject in the University, ordinarily register for the work of the first semester of the Sophomore year.

Science

Botany—1 unit or ½ unit. The course should cover a study of the life histories of types from the main groups of plants, and a series of simple physiological experiments. At least two thirds of the course should consist of laboratory work. A ½ unit in botany may be combined with a ½ unit in zoology for a full unit or year's work in biology.

Chemistry—1 unit. A year's course of descriptive chemistry, consisting of both classroom and laboratory work, should include the more common metals and nonmetals and their compounds. A careful record of laboratory experiments should be kept.

Physics—1 unit. Along with the use of the standard textbooks the year's course should include continuous and systematic laboratory practice, recorded in a notebook.

General Science—1 unit will be granted for general science, but this will not meet the requirement of one year of one laboratory science.

Electives

The electives offered for admission should be chosen from the subjects named above or any other subjects ordinarily taught in high schools and accepted by colleges and universities of standing, with the following restrictions:

Credit to the extent of 2 units each will be allowed in freehand drawing, mechanical drawing, shop work, home economics, stenography, typewriting, and bookkeeping. Two units in music, 1 of which must be in theory, will be accepted for entrance to all colleges other than that of Fine Arts, provided that the credit is presented from schools accredited by the University in courses in theory. Four units in music may be presented for admission to the College of Fine Arts. Credit in other subjects or additional units in the above subjects may be presented for consideration of the Registration Committee.

Vocational Work—Where the student has the full number of required units for the course which he elects to pursue, he will be given credit unit for unit for such vocational work as a recognized high school has granted toward the units required for graduation. If the student de-
sires to change from one course to another, he will have to meet the requirements of the newly elected course.

ADMISSION TO ADVANCED STANDING

Students coming from other institutions of higher learning will be required to present to the Registrar properly authenticated certificates of work done. Students from institutions approved by the National Association of American Universities ordinarily will be given credit, hour for hour, for work done in these institutions, in so far as it applies to the requirements of the curricula pursued at the University of Arizona. Credit from other institutions of higher education will be evaluated on merit on the basis of requirements at the University of Arizona. Only an approximate estimate of the total amount of credit allowed can be made in advance. The detailed distribution, branch for branch, is determined by conference after the student enters the University.

Certificates of record should be accompanied by statements of honorable dismissal or leave of absence, evidence of satisfactory scholarship, and a copy of the register or catalogue showing the content of the credit certified. These should be filed in the Registrar's office by August 1 for first-semester or January 1 for second-semester registration.

The Committee on Admission is empowered to reject in whole or in part any certificate and to require examination in any or all of the subjects offered. Applicants who have failed to maintain a thoroughly satisfactory scholarship record as distinguished from a record which is poor or barely passable will not be admitted, nor will admission be granted to students whose credentials from other institutions are not on file, or to students who, for any reason, are ineligible to continue in the institutions from which they desire to transfer.

Students who have registered in other colleges and universities may not disregard their records in such institutions in order to make application for admission solely on the basis of their high-school records.

Credits from Junior Colleges

Credits transferred from an accredited junior college will be accepted up to a maximum prescribed by the University for the first two years in the corresponding university curriculum.

The number of units accepted for any semester of junior-college work shall not exceed the maximum registration allowed for the first semester in residence in the corresponding university curriculum.

Junior colleges in Arizona accredited to the University of Arizona under the above provisions include Phoenix Junior College, at Phoenix, and Gila Junior College, at Thatcher.

ADMISSION OF SPECIAL STUDENTS

A limited number of applicants twenty-one years of age or over who have not completed the requirements for high-school graduation and as a result are unable to present the formal admission credits as specified may be admitted as special students to the various University colleges (except the College of Law) in consideration of experience, training, and purpose. Such students are not candidates for any degree but may elect, with the consent of the instructor in charge and of the Dean of the college concerned, such courses as they are prepared to carry with profit. Information concerning admission of special students to the College of Law may be found under the heading "College of Law," page 105. For the provisions under which a special student in a college other than the College of Law may become a candidate for a degree, see "Requirements for Graduation," page 69.
REGISTRATION

Time and Place—All students are required to register on designated days at the beginning of the academic year and at the beginning of the second semester, in the Registrar's office or in such rooms as may be designated for the purpose. The period of registration for credit closes at the end of the second week from the opening of classes. See the Calendar for the academic year, page 6.

Penalty for Late Registration—For Registration completed after the day scheduled for registration, a fee of $5 will be charged.

Presentation of Credentials—All students must file in the Registrar's office certified copies of their records in schools previously attended, together with certificate of graduation or of honorable dismissal. These credentials should be filed by July 15 for first-semester registration, and by January 1 for second-semester registration. Registration will not be granted without credentials from the school previously attended.

REQUIRED SUBJECTS—LOWER DIVISION

Required of all Freshmen—

English 1a and 1b, Freshman Composition.

Students who fail to pass the placement examinations given during Freshman Week will be required to complete English X successfully without credit, before they may be admitted to English 1a.

For men, military science and tactics, and physical education.

For women, physical education and Social Fundamentals.

Note—Exemption from English 1a will be granted upon special examination given during Freshman Week, or shortly after the opening of the second semester. Only those shall apply for this examination who have reason to believe that their attainment in English is a full half year beyond the standard required for admission. Each applicant is asked to bring to the Department a statement to this effect, signed by his high-school principal. Any student recommended for admission to English 1b on the basis of this examination will be given credit for the 6 units required in Freshman English on completing that same academic year English 1b with a grade of 3 or above.

Required of Sophomores—

For men, military science and tactics.

For women, physical education.

REQUIREMENT IN MILITARY SCIENCE

All lower-division men students registered for more than 5 units of university work are required to take military science and tactics, unless excused upon petition. Students claiming exemption will present to the Registrar a petition, on Form R-55, for such exemption. Pending action on his petition, the student will enroll in the courses prescribed for his year and will enter upon the work.

Freshmen will be required to register for Military Science 1a-1b unless transferring military credit which may be equated as college credit.

Grounds for exemption are restricted in the case of lower-division students to the following: (1) physical disability on the University Physician's certificate; (2) noncitizenship; (3) over twenty-five years of age at the time of admission to the University.

Lower-division students excused from military training by reason of physical disability must enroll in the Department of Physical Education for Men for corrective work in physical education.
Special students, under twenty-five years of age, registered for more than 5 units, are not exempt from the requirement in military science.

**DEGREE COURSES**

Specific Requirements—For the specific requirements of the several courses leading to degrees, see outlined courses of study under the listings of the various colleges.

Irregular Schedules—Regular classification in the University is based upon the completion of admission requirements, and enrollment in the various classes such as Sophomore, Junior, and Senior is given in consideration of the number of units completed rather than the nature of the courses for which the student is registered. Students who are entitled to regular classification are also entitled to elect special schedules at any time with the understanding that the approval of such schedules does not constitute the waiver of any specific requirements for a degree. It is provided, however, that minor students may deviate from prescribed schedules only upon written request of their parents.

**MAXIMUM UNITS ALLOWED**

Number of Units Students May Take Without Petition in Addition to Required Work in Physical Education for Men

- College of Agriculture—Maximum, 18 units
- College of Education—Maximum, 17 units
- College of Fine Arts—Maximum, 18 units
- College of Law—Maximum, 15 units
- College of Liberal Arts—Maximum, 17 units
- College of Mines and Engineering—Maximum, 19 units

Excess Units—Entering students may not elect work in excess of the number of units recommended by the proper dean. Petitions to elect work in excess of the number of units recommended in the course for which a student registers will be considered only when presented by students whose capacity for work has been demonstrated to the satisfaction of the Registration Committee.

The maximum credit allowed without petition, as indicated above, includes not only work done in residence but also correspondence courses and business-college or high-school work which the student is subsequently presenting for consideration by the University.

The petition for excess units should always specify the course which is considered to be in excess. Otherwise, should the petition be rejected, the last elective course appearing on the student's program is cancelled.

The burden of obtaining approval for excess units rests upon the student and not upon the office of the Dean or the Registrar. Where the student actually carries more than the number to which he should be limited, even though such subjects are passed, such units will be allowed, but no more than the normal maximum will be counted toward the degree. As an illustration, should a student in the College of Liberal Arts carry 20 units without petition, and without the discovery of his excess units, the courses will be credited to him at the end of the semester, but 3 units will be deducted.

**CHANGES AFFECTING REGISTRATION**

Registration in Extension Division—Resident students may not enroll for correspondence or extension courses except upon petition to the Registration Committee.
Change of Schedule—Registration may be changed by obtaining the proper form from the Registrar and securing thereon the signatures of the instructors concerned, the major professor or adviser, and the Dean of the college.

A fee of $1 is charged for change of registration, unless it involves only withdrawal from a course with a grade of 5, in which case no charge is made. This fee is effective with the opening of classes.

Change of College—Students who desire to change their registration from one college to another may do so by making formal application for admission to the college to which the transfer is to be made. Application blanks may be obtained at the office of the Registrar but may be filed only at the opening of a semester. Such change must be checked by the Registrar and approved by the deans of both colleges concerned.

Change of Major—A student may change his major subject at the beginning of any semester by filing with the Registrar a petition approved by the two major professors concerned and the Dean of the college.

STATUS OF STUDENTS

The students of the University of Arizona are classified as graduate or undergraduate.

Graduate students are such graduates of the University of Arizona or of other universities, colleges, or like institutions, as may be authorized to pursue advanced or special studies under the direction of a faculty. Such students may or may not be candidates for degrees.

Undergraduate students are:

Regular Students:

Classified—Those students who have fulfilled the matriculation requirements and are pursuing the regular college course.

Unclassified—Those students who have fulfilled the matriculation requirements but are not candidates for a degree.

Special Students:

In colleges other than the College of Law, those students twenty-one years of age or over who have not completed the requirements for high-school graduation but are admitted in consideration of maturity, training, and purpose. Special students are not candidates for any degree. (For special students in the College of Law, see page 106.)
Maricopa Hall, one of four women's dormitories
REGULATIONS AFFECTING STUDENTS

ATTENDANCE

A student, having registered for a course, is expected to attend all resulting appointments regularly.

Absences—The members of the Faculty are authorized to administer the matter of attendance in University classes but are expected to report all protracted absences. Such reports are submitted to the Dean of Men or the Dean of Women through the office of the Head of the department and the Dean of the college.

The coach, instructor, or official under whom participation in required field trips, intercollegiate debates, games and conferences, and academic contests off the campus occasions absences from other classes, shall prepare a list of the names of the students involved, secure thereto the signed approval of the Dean of each college concerned and, at least twenty-four hours before the activity, file the same in the office of the Dean of Men.

CHANGE OF STUDY LIST

Additions or Withdrawals—Changes in the original registration by additions or withdrawals may be made upon approval of the instructor, the major professor, and the Dean concerned. Blank forms for this purpose are obtained at the office of the Registrar. For such change of schedule a fee of $1, effective with the opening of classes, is charged, unless the change is made for the convenience of the department, or is limited to withdrawal with the failing grade of 5; then no fee is charged.

Withdrawal Grades—Withdrawal grades are restricted to W, an approved withdrawal, indicating satisfactory work at the time the course is dropped, or 5, a failure. Such grades awarded after the close of the second week of classes are included in the report for the semester. All withdrawals properly filed prior to the close of the second week of classes are recorded with a grade of W. Students who drop a course at any time without filing a change of study list are given a grade of 5 in the course.

Withdrawal from the University—Formal withdrawal from the University, with provision for the filing of approved withdrawal grade of W, is arranged through the office of either the Dean of Men or the Dean of Women. Students who drop their University work without filing a statement of formal withdrawal are given a grade of 5 in all courses, unless before leaving the University, permission is granted by the instructors for the completion of the work at a later date, in which case semester grades of Inc. are awarded under the following provision:

Students, who, because of illness or other acceptable reasons, withdraw from the University shortly before the close of the semester, may arrange with the instructors concerned for the award of a grade of Inc. The award of such grade must be indicated as part of the formal withdrawal. The proper form is obtained at the office of the Dean of Men or the Dean of Women.

Dismissal from Courses—After conference with the Dean of Men or Dean of Women and the Dean of the college in which the student is registered, an instructor may, at any time, dismiss a student from a course. Written notice of such action, signed by the Dean and the instructor interested, should be sent immediately to the Registrar. Such dismissal is considered a failure and is indicated on the record by the grade 5.
Grades—The grades awarded in courses of study are given on a basis of relative position in a series. These grades are: 1, 2, 3, 4, and 5. Grades 1 to 4 indicate different ranks of passing work; grade 5 indicates failure. As a standard of grade distribution, to be approximated as closely as possible, a normal probability curve has been adopted. D and Inc. are used to indicate deferred grading; D, a failure that may be removed before repetition of the course by extra class requirements or by examination given only at the time set for condition examination, but the grade may be filed only at or after the time set for a condition examination; Inc., incomplete, because of illness or other accepted reasons, a deficiency that may be made up within one year, at the convenience of the instructor. W is used to indicate satisfactory work at time of approved withdrawal; 5, a failure; credit may be obtained only by repeating the course. The grade U indicates unsatisfactory (barely passing) work and is used only in connection with preliminary and mid-semester scholarship reports.

Only one attempt to remove a D by examination or extra class work is permitted. A D must be removed before the repetition of the course in a semester corresponding to the one in which it has been obtained, and if not so made up, automatically becomes 5, necessitating the repetition of the course.

The grade of Inc. when not removed within the time limit of one year is officially recorded as a final withdrawal grade of IW.

A grade of 4 can be raised only by repetition of the course when this has been approved by the Dean, the major professor, and the Head of the department concerned.

Minimum Scholarship Requirement—Eighty per cent of the units completed at the University of Arizona for a bachelor's degree from this University must have received a grade above 4. In the colleges of Liberal Arts and Education a similar requirement applies to the major subject.

Examinations Required—All students, including graduating Seniors, are required to take semester final examinations in their respective courses.

ELIGIBILITY FOR EXTRACURRICULAR ACTIVITIES

General Activities—Any student, not on scholarship probation, who is registered for 10 or more units, is eligible for participation and may represent the University in any extracurricular activity other than intercollegiate athletics.

Participation in extracurricular activities on the part of students on probation is subject to such restrictions as may be imposed by the Dean of the college concerned.

No student shall make a public appearance in any extracurricular activity unless he has been certified as eligible by the Activities Committee, and the responsibility for securing this certification shall rest with the student concerned and with the supervisor of the activity in question.

Eligibility for Athletics—Participation in intercollegiate athletics is covered by the rules established by the Border Intercollegiate Athletic Conference. These are published in the Students' Handbook.

Classification—Class standings in the several colleges are based upon the fulfillment of the entrance requirements and the completed percentage of the total number of units required for the degree sought.

Sophomore standing in all colleges other than Law is based upon the
completion of 20 per cent, Junior standing upon 45 per cent, and Senior standing upon 70 per cent of the total number of units required for a degree. In the College of Law first-year standing is based upon the admission requirements of 60 academic units, second-year standing upon the completion of 22 law units, and third-year or Senior standing upon the completion of 48 law units.

Classification is based upon the number of units credited at the beginning of the school year.

Auditors—Auditors will be admitted to classes upon securing a card issued from the Registrar's office, provided the student has the approval of the instructor in charge of the course and the Registrar. No credit will be given for work done by an auditor. A registration fee of $10 is charged in addition to any special fees incident to the courses chosen, and a physical examination is required. Regularly matriculated students may not audit work which if taken for credit would constitute excess units.

Petitions—Students desiring to make requests of the University Faculty or the college faculty may obtain petition blanks in the Registrar's office. Petitions must in all cases bear the proper signatures before being filed with the Registrar.

Scholarship Reports—A report of grades covering scholarship deficiencies shall be furnished by the instructors to the Registrar's office at the close of work on Thursday of the fifth and the ninth weeks of each semester. The first report is published as a matter of information and warning to students. The second, or mid-semester, report is used as the basis of disqualification for the balance of the semester of those students other than Freshmen in their first semester of residence who are then reported as failing in more than half of their work. Freshmen, in their first semester of residence, who are so reported are placed on probation.

Delinquent Grades—The grades included on the preliminary and mid-semester reports are limited to 5, a complete failure, and U, unsatisfactory though passing, indicating poor and unsatisfactory work. Courses reported with the grade U are not included in units failed, and may be so reported only in connection with the special scholarship reports. (Note: The deferred grade of D, indicating conditional failure, may be reported only at the close of a semester.)

Withdrawal Failures—Courses dropped with a grade of 5 at any time during the semester shall appear on subsequent delinquent reports as well as on the final report for the semester.

SCHOLARSHIP REQUIREMENTS

Continuance in College—All students, other than those on probation, shall be required to carry with a passing grade more than 50 per cent of the work for which they are registered. Standings are checked at mid-semester and at the end of the semester.

In computing the percentage of scholarship failure, the student's schedule as officially recorded at the end of the second week of the semester shall be accepted as the total number of units carried, both for the purpose of the mid-semester report and of the final report of the semester. It is provided, however, that the schedule of units carried by students who are placed on probation shall be adjusted in conformity to such provisions as govern their reinstatement.

Any student (other than a Freshman in his first semester of residence) who fails to pass the required percentage of units as shown by the mid-semester delinquent report is disqualified from the University during the balance of the semester; if such failure is reported at the end of a semester the student is disqualified for the following semester.
Freshman students, in their first semester of residence, who fail to pass the required percentage of units at mid-semester or at the end of the semester are thereby placed on probation, but upon the recommendation of the Scholarship Committee of their college may be dropped from the University for the balance of the semester or for the following semester. Failure on the part of Freshmen after the beginning of their second semester in residence is penalized by disqualification.

Students who are placed on probation at the opening of a semester shall be required to carry with a passing grade at least two thirds of the work for which they are registered, as indicated by the mid-semester delinquent report. Students who are placed on probation at mid-semester must pass in at least two thirds of their work at the end of the semester.

Students on probation are returned to good standing upon passing the required percentage of work as indicated by the first mid-semester or semester delinquent report following their registration with probationary standing.

Students disqualified at the close of the first semester, or at the time of either mid-semester delinquent report, may enter the Summer Session, but students disqualified at the close of the academic year are not eligible to enter the Summer Session conducted by the University of Arizona.

Students who have twice been disqualified may not return except on evidence that underlying conditions have materially improved and that they are now capable of serious intellectual effort (correspondence courses successfully carried, credits from another institution, statement from employers that responsibilities have been successfully carried, etc.).

Students disqualified because of scholarship failure may be granted a card of honorable dismissal in which a statement regarding deficiencies in scholarship shall be expressly included. In the application of the rules stated above the Summer Session, either in whole or in part, is regarded as a semester.

Students disqualified by scholarship failure are not permitted to register in the University Extension Division for correspondence or extension work, except upon petition addressed to the Registration Committee, office of the Registrar.

Disqualification from the University for any reason revokes student privileges during the period of disqualification.

STUDENT ACCOMMODATIONS

Residence Halls—Residence in dormitories is limited to undergraduate students, preference being given to Arizona students who are carrying 10 or more units of work. Rooms will be assigned to graduate students at the discretion of the University only when there are no undergraduate applicants for the available space. Provision is made for furnishing rooms on the University campus for about 667 students. There are two residence halls for men: Arizona Hall, accommodating 64, and Cochise Hall, 150. There are four residence halls for women: Pima Hall (co-operative), providing for 30 women; Maricopa Hall, for 125; Gila Hall, for 156; and Yuma Hall, for 142. There are also fraternity and sorority houses under the supervision of the University.

The University reserves the right to change the residence of any student, or to deny residence to any student, in cases where such action is desirable.

All students in the residence halls sleep on porches screened and properly sheltered. Beds, mattresses, and pillows are furnished. Rooms contain tables, chairs, and chiffoniers. Bed linen is furnished and is laundered by the University each week. Heavy blankets and bathrobes
should be provided by the student for sleeping-porch use. Students care for their own rooms under the direction of the Head Resident. Residence halls will be open Monday, September 13. Students will not be admitted before that day.

**Reservation of Dormitory Rooms**—Application for the reservation of a dormitory room should be made to the Comptroller of the University immediately upon receipt of notification from the Registrar that admission has been granted. As the accommodations are limited and the rooms are usually all engaged before the opening of the college year, students should make early application. A deposit of $10 must accompany each application for room. This will apply as security against damage to or loss of the University property. This deposit is refunded when a student leaves the dormitory, provided all charges for loss or damage against the student have been paid. No student will be admitted to any room without presenting a card from the Comptroller indicating the payment of this deposit. Applicants for rooms in women's dormitories, in addition to sending the required deposit, must secure a supplementary application blank from the Dean of Women. (Deposits on rooms will not be refunded after fifteen days preceding the opening of the first semester and not later than the first day of registration of the second semester, except in case of inability on the part of the University to provide accommodations.)

**Assignment of Rooms**—After the deposit for room reservations has been received by the Comptroller, assignment to dormitories will be made by the University Business Office. Assignment of rooms in each hall will be made by the deans of men and women. Preference in the renting of rooms in University halls is given to citizens of the state of Arizona up to August 1. After this date applicants for rooms will receive assignments according to priority of application, without reference to place of residence. For cost of rooms, see page 55.

**Residence Regulations for Women Students**—All women registered as undergraduate students in the University of Arizona are required to live in the residence halls, in sorority houses, or in approved registered lodgings, except those living with parents, approved guardians, or those working for board and room in private families. Residence arrangements must be approved by the Dean of Women at or prior to registration. No change of residence may be made without the permission of the Dean of Women, and such permission must be secured at least one week in advance. All women of Freshman rank not living at home are required to live in the dormitories during the first year. Graduate students assume responsibility for their own living arrangements but, in case of surplus space in the dormitories, may apply to the Dean of Women for accommodations there. Permission to live off the campus will be given undergraduates only when the residence halls are filled. Undergraduate women students are not permitted to live alone or in groups in apartments, public inns, or hotels, or in any house in which men roomers are accommodated. No woman student or group of women students will be permitted to make lease contracts without first securing from the Dean of Women her approval of such contracts.

All women students other than Freshmen who become pledged to sororities during the rushing period are permitted to move to sorority houses at that time. After the close of the rushing period, no students will be permitted to move from the dormitory until the close of the semester. Freshman women who become pledges to sororities will not be permitted to move to sorority houses until after the completion of the Freshman year, but they will be permitted to take their meals at the sorority houses, all of which are close to the campus. Further information may be obtained from the information booklet for women students issued by the Dean of Women's office.
Residence Off the Campus—The residence of the students off the campus except in the cases of those living at home is subject to the approval and is under the supervision of the University authorities.

Co-operative Dormitory—Pima Hall, for women, is operated on the co-operative plan and is the only dormitory in which meals are served. In order to cut the cost of overhead, students living in this hall do all cleaning and cooking. The working schedule requires of each girl nine hours of service per week in the house. The schedule is so arranged that it does not conflict with classroom work. Meals are planned under the supervision of a house manager who is familiar with the principles of nutrition and dietetics, and the menus are checked each month with the Department of Home Economics. The cost of board and room under this plan fluctuates with the price of food. During the year 1936-37 the cost of room and board on the co-operative plan approximated $20 per month. Thirty girls can be accommodated in Pima Hall.

The University Dining Hall—The University Dining Hall is under the management of a trained dietitian who is responsible to the President. It is the aim of the University to serve substantial, wholesome, and appetizing meals at minimum cost.

The service at the University Dining Hall is cafeteria style and a good variety of food is obtainable. Since the amount of food needed by the individual depends largely upon weight and exercise, each student may select a meal according to his or her requirements.

Items vary in price; therefore the cost per meal depends upon the number of dishes and the selection which is made. The average cost of food for the average student is approximately 80 to 85 cents a day, or $25 a month. Students eating at the Dining Hall may purchase meal books having a value of $10 from the University Cashier at a cost of $9.50, or they may pay in cash at the time the meal is served.

EXPENSES AND FEES

(University fees are effective only during the year covered by the catalogue in which they are listed. The Board of Regents reserves the right to change all fees and charges from time to time without notice if necessary.)

The University is unable to extend credit. It is therefore essential that all students shall have sufficient funds at hand on entering to defray their immediate expenses. An estimate of the amount required for the first month in residence, covering board and room on the campus, registration and incidental fees, books and supplies, etc., would be $130. (This does not include the nonresident tuition fee of $100 each semester.)

The minimum cost covering all University charges for the academic year, exclusive of the nonresident tuition fee which totals $200, is approximately $420.

Summary of Minimum Expense for Campus Students

<table>
<thead>
<tr>
<th>Item</th>
<th>General per year</th>
<th>College of Law</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board and room (approximately $35 per month)</td>
<td>$300</td>
<td>$300</td>
</tr>
<tr>
<td>Books and supplies (500 per semester)</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>Incidental registration fee (25 per semester)</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Laboratory and incidental fees</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Special law fee (25 per semester)</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td><strong>Total minimum expense</strong></td>
<td><strong>$420</strong></td>
<td><strong>$480</strong></td>
</tr>
</tbody>
</table>

* Freshman engineering students need an additional $15 for the first semester.
† All nonresident students pay, in addition, a tuition fee of $100 each semester.
All students should add to this list incidental personal expenses as needed, and a room reservation fee (returnable) of $10.

Men students taking military science should add a military deposit of $25 of which approximately $15 are returnable.

It is estimated that a minimum of $275 is necessary to cover a year's expenses in fraternity or sorority houses.

Tuition—The University of Arizona requires no general tuition fee of students who are citizens of the state of Arizona, and there is no charge for instruction, except for some courses in the School of Music. Graduate fellows are excused from all fees except the incidental registration fee and the graduation and thesis-binding fees. Other graduate students registered for graduate credit as candidates for advanced degrees are exempt from the nonresident tuition fee.

Students who have been awarded degrees, but who register for work in the College of Law, are considered as undergraduate students in law, rather than graduate students, and are not exempt from the nonresident tuition fee.

Tuition for Nonresident Students—Provisions governing the assessment of a nonresident tuition fee have been adopted by the Board of Regents as follows:

1. Every nonresident undergraduate student carrying 6 or more units shall be required to pay a nonresident fee of $100 each semester.

2. A student to be considered a resident of Arizona, for the purpose of registering at the University of Arizona, must present evidence as follows:
   a. If under twenty-one years of age—that the supporting parent (or guardian) has been a bona fide resident of the state of Arizona for at least one year next preceding registration.
   
   In the event that a legal resident of Arizona is appointed as the guardian of a nonresident minor, such minor does not become a resident until the expiration of one year from the time of appointment and then only upon a proper showing that such appointment was not made to avoid the nonresident fee.
   
   b. If over twenty-one years of age—that bona fide residence in the state has been established for at least one year next preceding registration, and that he is eligible to become a registered voter. (Sec. 3 of Art. 7, Constitution of Arizona provides, "For the purpose of voting, no person shall be deemed to have gained or lost a residence . . . while a student at any institution of learning . . .")
   
   c. If an alien who has taken out first naturalization papers—that residence has been maintained in the state for at least one year previous to registration.
   
   3. The student must have the question of his legal residence passed upon previous to registration and payment of fees. A sworn statement of the facts is required and a form for the purpose is provided at the time of registration. Any student found to have made a false or misleading statement as to his residence shall be subject to dismissal from the University.
   
   4. In all cases where the records indicate that the student's home is outside of Arizona, the nonresident fee shall be assessed. Claims for refund may, however, be filed at any time within thirty days.

Incidental Fee—An incidental fee of $25 each semester is paid on day of registration by each student registering for 6 units of more of work. Of this fee, $8.75 is credited by the University to the Student Activity Fund. An incidental fee of $15 is paid by each student registering for 5 units or less of work. Graduate students registered for thesis work only, pay an incidental fee of $5. A fee of $2 per unit, with a minimum of $6, is payable each semester by graduate students carrying work other than thesis in absentia.
Law College Fee—All students registering in the College of Law for
6 units or more of work are required to pay a fee of $25 each semester
in addition to other fees. All students registering in the College of Law
for 5 units or less of work are required to pay a fee of $4 per unit each
semester in addition to other fees. Any student in any other college of
the University taking 6 or more units of law is subject to a fee of $25
each semester in addition to other fees.

Auditor's Fee—Auditors pay a registration fee of $10 a semester, and
any additional fees incident to the courses chosen. When courses
audited are combined with courses for credit, with a total of more than
5 units involved, the full registration fee of $25 is charged.

Late Registration—For registration completed after the last day of
registration as scheduled, a fee of $5 will be charged.

Change of Registration—For any change in registration, other than
withdrawal with a failing grade of 5, a fee of $1 will be charged. This
fee is effective the first day after the close of registration as scheduled.

Special Examination Fee—A fee of $2 is charged for all special ex-
aminations for credit and for Freshman placement examinations given
after the time regularly scheduled. A fee of $5 is charged for a final oral
examination for graduate students who have done thesis work in
absentia.

Men's Gymnasium Fee—A fee of $2 is charged each semester to cover
the cost of the use of locker and towels. One dollar is refunded at the
end of each semester if equipment and materials check is satisfactory.

Women's Gymnasium Fee—All women registered for an activity course
in the Department of Physical and Health Education will pay a fee of
$5 each semester. This fee, which covers the cost of laundry of towels,
swim suits, and gymnasium suits, will entitle each student to the use of
locker, lock, towel, swim suit, pool, gymnasium, fields, athletic equip-
ment, and gymnasium suit. Two dollars of this fee will be refunded
each semester to each student who has returned in good condition all
articles charged to her. Refunds are made only on the dates posted by
the Department of Physical and Health Education.

Laboratory Fees—In certain laboratory courses, fees are required to
cover the cost of breakage and material supplied. A statement of the
amount of such fees may be found in connection with the announcement
of courses in this catalogue.

Breakage Deposit—A breakage deposit is required of each student
registering for laboratory work in the Department of Chemistry. This
fee, less the value of apparatus broken by the student, is returned upon
completion of the course.

Cadet Uniforms—All students who are required to take military train-
ing are supplied with a uniform without cost. A deposit on day of regis-
tration of $25 is required to cover purchase of military boots and pos-
sible loss of uniform and equipment. Approximately $15 of this deposit
is refunded at end of the college year or upon withdrawal from the
course if no loss occurs.

A student electing the advanced course is supplied with an officer's
uniform made to individual measurements. A deposit of $30, to be
refunded at the close of the year, is required to cover possible loss of
uniform and equipment. In addition students of the advanced course
are required to purchase officer's boots and Sam Browne belts at their
own expense at an approximate cost of $25.

Trips for Students of Engineering, Agriculture, Economics, and Anthro-
pology—Trips to near-by mines, mills, smelters, and power plants are
made during the year by students in mining, metallurgy, and geology,
and also in mechanical, civil, and electrical engineering. Trips to
ranches and ranges are made by students in agricultural courses, and
to points of historic and prehistoric interest by students taking work
in the Department of Anthropology. Students in economics may be
asked to make trips to industrial plants and business houses. The stu-
dents pay the transportation expenses as well as all personal expenses.

Late Petition for Degree—For petition for candidacy for a degree
filed after May 15 of the Junior year (provided such Junior year has been
the year immediately preceding that in which graduation is desired) a
fee of $2 will be charged.

Graduation Fee—A graduation fee of $15 payable not later than April
1 of the year of graduation is required of each candidate for a degree,
unless such candidate has already taken a degree in the University, in
which case a fee of $5 is charged.

Binding Thesis—A fee of $5, to cover the cost of binding two copies
of the thesis for the Library, is required of each graduate student at the
time of submitting the thesis.

Transcript Fee—Each student is entitled, upon request, to one tran-
script or statement of credits without cost. For each additional state-
ment or transcript a fee of $1 is charged. A statement of credits is a
memorandum issued to the student; an official transcript is mailed direct
to the institution to which the student transfers. Statements of any
kind will not be issued for students whose records indicate indebtedness
to the University for accounts other than duly authorized loans.

Music Fee, Tuitions, Appointment Regulations—All lessons must be
paid for in advance and a receipt in the form of a class card from the
Registrar's office given to the instructor before the student will be given
lessons.

The rates for tuition in theoretical and academic subjects are the
same as those in other colleges.

The rates for tuition for strictly individual lessons in voice, piano, or
orchestral instruments, and rates for the rental of pianos, are listed un-
der College of Fine Arts.

Board—The University Dining Hall is operated on a self-sustaining
basis for the convenience of students. The average cost of food for the
average student is approximately $25 per month. Students eating in the
University Dining Hall may purchase a $10 meal book for $9.50, or they
may pay in cash at the time the meal is served. No credit, however,
will be extended. The University charges for board only a sufficient
amount to cover its cost and reserves the right to increase the cost to
meet any increase in the price of foodstuffs and service.

The University reserves the right to prescribe rules under which its
students shall board in the University Dining Hall, in private families,
in fraternity houses, or elsewhere, whether these rules are or are not
published in its annual catalogue.

Room—A deposit of $10 must accompany each application for room.
This will apply as security against damage to or loss of University prop-
erty. This deposit is refunded when a student leaves the dormitory
provided all charges for loss or damage against the student have been
paid. No student will be admitted to any room except on card from the
Comptroller.

All applications for rooms, with accompanying check, should be mailed
to the Comptroller, University of Arizona. Deposits on rooms will not
be refunded after fifteen days preceding the opening of the first se-

mester and not later than the first day of registration of the second
semester, except in case of inability on the part of the University to
provide accommodations.

Preference in the renting of rooms in University halls of residence is
given to citizens of the state of Arizona up to August 1. After this date
applicants for rooms will receive assignments according to priority of application without reference to place of residence.

The charges for University dormitory rooms accommodating more than one student in a room vary from $10 to $15 per person per calendar month, payable monthly in advance. To the extent that they are available, single rooms may be procured at costs varying from $20 to $30 per calendar month.

**Payment of Fees**—The University accepts checks for the amount due the University but cannot advance cash on checks. It is advisable for students entering the University to establish accounts in local banks prior to registration. **All checks should be made payable to the University of Arizona.**

**Refunds**—All refunds and deposits that may be due to students for any reason whatsoever will be forfeited unless called for on or before June 30 of the year in which they become due.

**Tuition**—A student withdrawing from the University within one week after registering will be granted a refund of all the tuition fee; after one week and before the end of one month, $75; after one month and before the end of two months, $50. After two months no refund will be granted.

**Incidental Fee**—A student withdrawing from the University any time within two weeks after registering will be granted a refund of all the incidental fee less $5—the cost of registration. After the second week no refund will be granted.

**Board and Room**—Board and room payments will be refunded pro-rata.

**Law College Fee**—A student withdrawing from the University within one week after registering will be granted a refund of all the Law College fee. After one week and before the end of one month, $20. After one month and before the end of two months, $15. After two months no refund will be granted.

**Military**—See page 136 for refund.

**Withdrawal from Courses**—Refunds on laboratory and field-trip fees or special deposits may be made on recommendation of the head of the department concerned.
FINANCIAL ASSISTANCE AND HONOR AWARDS

MEANS OF SELF-SUPPORT

Various positions about the grounds, buildings, and laboratories of the University, paying from $10 to $25 per month, are filled by students who must be self-supporting. Preference is given to students from Arizona and every effort is made by the Appointment Office to assist needy students in finding employment. All new students are urged to come prepared to meet their expenses in full for at least one semester.

Application for employment should be addressed to the Director, Appointment Office.

STUDENT LOAN FUNDS

The Alumni Association Fund of $300 was given by the Alumni Association of the University in 1922, and is, for the present, available to deserving students who are members of the Junior and Senior classes.

The J. Preston Jones Memorial Fund, in memory of J. Preston Jones, class of 1916, and in appreciation of his life and service as a student and as a member of the administrative staff, was established in 1921 by former President R. B. von KleinSmid, with a minimum gift of $1,000. Loans from this fund are available for deserving students upon terms governing other University funds used for like purpose.

The John E. Pollock Memorial Loan Fund of $100 is open only to citizens of Arizona but otherwise without distinction of race or creed; awarded on the recommendation of the President and the committee in charge of loans.

The Merrill P. Freeman Fund was established in 1920 by bequest. The proceeds from the fund (which were to be used for the maintenance of high scholastic standings) are granted on the basis of scholarship.

The Rotary Club Loan Fund was established in 1921 through the donation of $1,000 by the Rotary Club of Tucson. In 1932 the fund was increased to $1,500.

The Daughters of the American Revolution Loan Fund of $400 has been established by the Tucson Chapter and is available under certain conditions to women of the University in their Junior or Senior year.

The Alva Otis Neal Fund of $200 is a memorial to the late Alva Otis Neal, former Registrar of the University, and is available to both men and women students.

The Phi Kappa Phi Loan Fund of $150 has been established by the Arizona Chapter of the national honor society and is available to student members.

The Ajo Alumni Association Fund of $75 was given by the Ajo group of the University Alumni Association and is available to students from Ajo, Arizona.

The Cosmopolitan-International Relations Fund of $70 was established in 1927, jointly by the Cosmopolitan Club of the University and the Tucson Woman's Club, for the purpose of assisting deserving foreign students in the University.

Mortar Board Loan Fund—To establish a revolving loan fund for the women students of the University of Arizona, the Mortar Board has placed $100 (to be gradually increased) to be loaned at the discretion of the Dean of Women without interest, for periods not longer than two months, in small emergency loans.

The Women's Self-Government Fund of $200 is available to women students of the University.

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The Alpha Zeta Fund of $80 is sponsored by the fraternity of Alpha Zeta. This fund is limited to deserving students in the College of Agriculture who have attained Sophomore standing and have been in attendance at the University of Arizona for at least two semesters.

These funds are designed to give temporary assistance to deserving students. The conditions under which loans are made may be ascertained by inquiry to the Dean of Men or Dean of Women. Application should be made at least two weeks before the funds are needed.

UNIVERSITY APPOINTMENT OFFICE

The University of Arizona maintains an Appointment Office for the purpose of helping employers find well prepared and efficient workers. The University is interested in helping graduates of the University of Arizona and other qualified persons to get in touch with prospective employers and to make available to them the records of persons enrolled in the University Appointment Office. All graduates and former students of the University are eligible for enrollment. Persons now engaged in teaching or in school administration in Arizona are also eligible. Those enrolling for the first time are charged an enrollment fee of $2; other details with respect to methods of operation and costs may be obtained by writing to the Director.

FELLOWSHIPS, SCHOLARSHIPS, AND PRIZES

The appointments carrying pecuniary aid which are available for students are divided into fellowships and scholarships, the former being open to graduate students only.

Fellowships are awarded to graduate students who are actively working for advanced degrees and whose major subject in each case lies within the field designated by the fellowship. The appointments are usually made in May of each year. Applications for fellowships should be made through the Dean of the Graduate College on blanks which will be furnished on request.

Fellowships

Arizona Bureau of Mines Fellowships—The University of Arizona, through the Arizona Bureau of Mines, offers two fellowships to men holding bachelor's degrees who have specialized in metallurgy or chemistry as undergraduates. Each fellowship pays $600 per year. The fellows are expected to put half their time during the academic year upon research work for the United States Bureau of Mines Experiment Station located on the campus of the University. Time not utilized in this way must be spent in study in candidacy for an advanced degree.

Botany Fellowship—A fellowship of $350 for the academic year is granted to a graduate assistant in botany.

The Paul Steere Burgess Graduate Fellowship—This fellowship carries a cash payment of $500, to be awarded each year by Dean Burgess for graduate study in any department of the College of Agriculture. Applications should be received by April 1.

Business and Public Administration Fellowship—A fellowship of $350 for the academic year is granted to a graduate assistant in business and public administration.

Chemistry Fellowships—Three fellowships of $350 each are granted to graduate assistants in chemistry for the academic year.

Civil Engineering Fellowship—A fellowship of $450 for the academic year is granted to a graduate assistant in civil engineering.

Education Fellowship—A fellowship of $350 for the academic year is granted to a graduate assistant in education.

English Fellowship—A fellowship of $350 for the academic year is granted to a graduate assistant in English.
Geology Fellowships—Two fellowships of $450 each are granted to graduate assistants in geology for the academic year.

History and Political Science Fellowship—A fellowship of $450 for the academic year is granted to a graduate assistant in history and political science.

Home Economics Fellowship—A fellowship of $450 for the academic year is granted to a graduate assistant in home economics.

Irrigation Economics Fellowship—Dr. G. E. P. Smith has established a fellowship, which will amount to $500 for the year 1937-38. Applicants must be graduate students who have a foundation knowledge of economics and irrigation principles and practices. The selection will be made by the Head of the Department of Agricultural Engineering and the Head of the School of Business Administration. It is required that approximately a third of the student's academic program be devoted to study and a report on a research problem of interest and importance to the state.

Metallurgy Fellowship—A fellowship of $450 for the academic year is granted to a graduate assistant in metallurgy.

Nutrition Fellowship—A fellowship of $530 for the fiscal year is granted to a graduate assistant in nutrition.

Philosophy and Psychology Fellowship—A fellowship of $350 for the academic year is granted to a graduate assistant in philosophy and psychology.

Physics Fellowship—A fellowship of $350 for the academic year is granted to a graduate assistant in physics.

Spanish Fellowship—A fellowship of $350 for the academic year is granted to a graduate assistant in Spanish.

Steward Observatory Fellowship—A fellowship of $450 for the academic year is granted to a student doing graduate research in astronomy.

Scholarships and Prizes

The Alpha Kappa Psi Scholarship Medallion—Alpha Kappa Psi, Honorary Commerce Fraternity, offers a medallion to the Senior commerce student who has made the highest scholastic average for the first three years of his college work.

The Alpha Zeta Scroll—Alpha Zeta, the National Honorary Agricultural Fraternity, presents an inscribed scroll of merit to the Senior who has been selected by a committee of the agricultural Faculty as being the most outstanding agricultural graduate.

The American Association of University Women Scholarship—The Tucson Chapter of the American Association of University Women gives a scholarship to aid in the education of some young woman.

The Associated Women Students Awards—The Associated Women Students give two $10 awards to undergraduate women who have shown themselves worthy through character and sincerity of purpose.

The Bennett Scholarship—The Philo Sherman Bennett Scholarship is endowed by a gift of $500 to the University, through the agency of Mrs. William Jennings Bryan, the income to be used in aiding young women to secure an education.

The Phebe M. Bogan Memorial Poetry Prize—The Rimers' Club, in memory of Mrs. Phebe M. Bogan, offers a prize of $15 for the best original poem submitted in the Phebe M. Bogan Contest. This contest is open to all regularly enrolled students of the University and is under the direction of a member of the Department of English.

The Chi Omega Prize—The Zeta Beta Chapter of Chi Omega offers a prize of $25 each year to the girl who has done the most outstanding work in the Department of Economics.
Civil Engineering Award—The Arizona section of the American Society of Civil Engineers presents annually to the most outstanding member of the graduating class in the Department of Civil Engineering an engraved certificate, a junior badge of the society, and one year's dues in the national organization. The selection is based upon scholarship, engineering judgment, and professional interest.

The Class Scholarship Awards—In recognition of high scholarship attainment the University has established an award for each class to be given to the student who makes the highest scholastic average for the year. In order to be eligible to receive such an award a student must have completed a minimum of 30 units for the year.

The Byron Cummings Cups—Dr. Byron Cummings offers a cup to each student who represents the University of Arizona in an intercollegiate varsity debate and a cup to each student who represents the University in the junior college debates.

The Delphian Award—The Tucson Delphian Chapter, in order to encourage better speech, has given a cup to the University on which is to be engraved each year the name of the woman student who has done the most outstanding work in public speaking.

The Delta Pi Sigma Cup—Delta Pi Sigma, Honorary Mathematical Fraternity, offers a cup which is awarded to the student completing, with the highest average, a minimum of 15 units, covering College Algebra, Plane Trigonometry, Analytic Geometry, Differential and Integral Calculus.

The Delta Sigma Rho Forensic Awards—The local chapter of Delta Sigma Rho offers each year a gold medal to the student who represents the University of Arizona in the oratorical contest of the Pacific Forensic League, and a gold medal to the student who represents the University of Arizona in the extemporaneous speaking contest of the Pacific Forensic League.

The Jennie G. Fowler Memorial Poetry Prize—The Rimers' Club, in memory of its founder, Mrs. Jennie G. Fowler, offers a prize of $15 for the best poem showing special appreciation of nature submitted in the Jennie G. Fowler Contest. The contest is open to all regularly enrolled students of the University and is under the direction of a member of the Department of English.

The Merrill P. Freeman Medals—Under the will of the late Dr. Merrill P. Freeman two medals, one for a man and one for a woman, are annually awarded by the administration of the University to members of the graduating class. Scholarship, character, and qualities of leadership are considered in making the awards.

The Gittings Honor Cup—Miss Ina Gittings, Director of Physical Education for Women, offers each year a cup to encourage well-balanced activities, stressing scholarship equally with accomplishment in sports. This cup will be awarded to a Senior of the physical education major group.

The Heard Scholarship Fund—The late Dwight B. Heard left a bequest of $20,000, the income of which is to be used to provide free scholarships in the University in such amounts and under such regulations as the University officials may determine.

Home Economics Club Cup—The Home Economics Club has given a cup on which is inscribed each year the name of the Senior doing the most outstanding work in home economics. The choice is made on the basis of character, participation in home-economics activities, and scholarship.

The Honor Military Graduate—Each year the name of the honor military graduate is inscribed upon a plaque displayed in the Military Department. The student is selected in conformation with War Depart-
ment regulations, which require that he graduate with distinction in addition to showing excellence in military work.

The Interfraternity Scholarship Cup—The Interfraternity Council has given a cup which is awarded each year to the fraternity having the highest scholarship for the year.

Inter-Hall Cup—Dean Evelyn Wellington Jones has given a cup which is to be awarded each semester to the University of Arizona residence hall having the highest scholarship for the semester. This cup is to be permanently held by the group winning it three successive times.

The Meyer Rubinstein Award—Mr. Henry Rubinstein of Tucson in memory of his son Meyer, awards annually $25 to the Junior or Senior student adjudged to employ the most cultured diction in daily speech contacts. No student can receive the award more than once. To be eligible, a student must be nearing completion of at least his second year of speech training in the University of Arizona.

The Mortar Board Cups—Each year the local Mortar Board awards two cups, one to the Freshman girl and one to the Sophomore girl with the highest record of all-round attainment.

National Collegiate Players Cup—The National Collegiate Players will present a loving cup each year to the student who has given the most outstanding dramatic performance.

Phi Alpha Delta Award—The Knox Chapter of Phi Alpha Delta, Law Fraternity, has given a cup on which is to be inscribed each year the name of the winner of the Phi Alpha Delta Speech Contest.

Phi Beta Kappa—Phi Beta Kappa, National Honor Society, has for its object the encouragement of scholarship. Elections are made each year from the Senior class in the College of Liberal Arts.

Phi Delta Phi Scholarship Award—The Samuel L. Pattee Inn, the Tucson Chapter of the National Legal Fraternity, Phi Delta Phi, in order to promote scholarly attainment, has given a plaque on which will be engraved each year the name of the graduating Senior who has the highest scholarship average for the full three years of his law course, at least one year of which must have been completed at the University of Arizona.

Phi Kappa Phi Honor Society—Phi Kappa Phi, National University Honor Society, to encourage high standards and a spirit of fellowship among leaders in both liberal and practical education, confers membership as an honor on a limited number of faculty members, alumni, and Seniors who have deserved recognition in any department of knowledge recognized in the curricula of American universities.

Phi Kappa Phi Plaque—The Arizona Chapter of Phi Kappa Phi has established a bronze plaque, located in the foyer of the University Library, upon which is to appear each year for a period of twenty years, the name of an outstanding graduating Senior, chosen on the basis of superior scholarship and other meritorious achievement.

Phi Kappa Phi Freshman Awards—The local chapter of Phi Kappa Phi, National University Honor Society, gives certificates of merit to the ten students who make the highest scholastic records in their Freshman year.

The Phi Lambda Upsilon Cup—The Arizona Chapter of Phi Lambda Upsilon, National Honorary Chemical Fraternity, has given a cup on which is to be engraved each year the name of the student making the highest grade in a competitive examination covering the field of first-year chemistry. The competition is open to all regular Freshman students registered in Chemistry 1a-1b or 2a-2b during the current year.

The Pi Lambda Theta Award—The Arizona Chapter of Pi Lambda Theta, National Honorary Educational Sorority, offers each year an award of $40 to a Senior girl in the College of Education who, in her
previous work at the University of Arizona, has demonstrated seriousness of purpose and has achieved high scholastic attainment.

The President's Cup and Scholarship—In order to encourage scholarship on the part of Freshman students, the President's Cup and Scholarship are awarded annually to the high school whose entire Freshman group maintains the highest average in scholarship during the Freshman year in the University. No high school shall be considered a competitor unless it has a representation of at least three students in the Freshman class of the University during both semesters. The scholarship of $50 is available to a graduate, selected by the high-school faculty, upon matriculation in the University as a member of the succeeding Freshman class.

The Reserve Officers Association—Pima Chapter awards each year a gold medal to the honor Junior in Military Science and Tactics.

Rhodes Scholarships—Under the conditions of the Rhodes Scholarship Trust the University of Arizona may nominate two candidates each year for Rhodes Scholarships. Each scholarship is tenable for three years at Oxford University. The stipend of a Rhodes scholar is £400 a year. He must be a citizen of the United States, unmarried, and between the ages of nineteen and twenty-five.

The Saber Award—The Professor of Military Science and Tactics on duty at the University presents annually a saber to the most efficient Senior Cadet Officer.

The Scabbard and Blade Medals—The Local Company of the Scabbard and Blade awards each year gold medals to the honor Sophomore and the honor Freshman in Military Science and Tactics.

Senior Prize in the Law of Trusts—For the purpose of stimulating in the members of the University of Arizona law student body a special interest in the law of trusts and the administration of trust affairs, the Valley National Bank offers each year a first prize of $50 and a second prize of $25 to be awarded by the judges, selected by the donor, to the two members of the graduating law class who by the said judges are deemed to have submitted the best and second best drafted instruments answering the legal problem propounded by the donor.

The Sigma Delta Pi Medals—Pi Chapter of Sigma Delta Pi, National Spanish Honor Fraternity, gives medals each year to students making the highest grade in competitive examinations in first-year, second-year, and third-year Spanish. These are the official bronze medals for excellence in Spanish struck by the American Association of Teachers of Spanish.

Sigma Xi—The Society of Sigma Xi is a national honor society for the promotion and encouragement of scientific research. Elections are made from the graduate students and faculty in recognition of research ability.

The Steinfeld Awards—Albert Steinfeld & Company offers a cup upon which is to be engraved each year the name of the campus organization which earns the highest total number of points in the Steinfeld Intramural Speech Tournament. A cup is also given to the winner of first place in the final contest of the tournament, a silver medal to the winner of second place, and a bronze medal to the winner of third place.

The Tau Beta Pi Cup—Tau Beta Pi, Honorary Engineering Fraternity, offers a cup to the Sophomore engineering student having the highest scholastic record for his Freshman year.

The Tucson Players Awards—The Tucson Players have presented the University of Arizona with two cups which are to be awarded each year to the young man and the young woman showing greatest excellence in dramatic activities. The cups will be engraved with the names of the winners each year.
The Tucson Woman's Club Scholarship—The Tucson Woman's Club has established a scholarship of $100 to assist in the education of a worthy student.

The University Cup and Scholarship—In order to encourage scholarship on the part of Freshman students, the University Cup and Scholarship are awarded annually to the high school that has prepared the group of three students that stands highest in scholarship during both semesters of the Freshman year in the University. Each student must complete a minimum of 30 units for the year. The scholarship of $50 is available to a graduate, selected by the high-school faculty, upon matriculation in the University as a member of the succeeding Freshman class.

CLASS HONORS

Scholarship honors are conferred annually for the purpose of encouraging scholarship that is sound in every point. They are noncompetitive and are awarded to every student attaining a required proficiency. Students, other than those in the College of Law, who attain the required standard of excellence are awarded, as Freshmen, honorable mention, and in the other classes, Sophomore, Junior, or Senior Honors. Students in the College of Law, qualifying similarly, are awarded either First-Year, Second-Year, or Third-Year Honors. Seniors in the College of Liberal Arts taking work as first-year law students in the combined six-year course in law will be awarded Senior Honors.

To be eligible for honors, students other than those in the College of Law must complete at least 30 units of work (students in the College of Law must complete successfully at least 24 units) and attain a grade G of 2, or better than 2, where G is given by the following formula:

\[
G = \frac{1(N_I) + 2(N_R) + 3(N_S) + 4(N_J) + 4.5(N_D) + 5(N_S)}{N_I + N_R + N_S + N_J + N_D + N_S}
\]

HONORS CONFERRED AT GRADUATION

Special Honors

Special honors in three grades are awarded in recognition of superior scholarship in the work leading to the bachelor's degree. These honors are awarded at Commencement and inscribed on the diplomas of the recipients.

First: With Highest Distinction is awarded to the three graduates whose academic standing in the class is highest.

Second: With High Distinction is awarded to those students whose academic standing ranks them in the highest one twentieth of the remainder of the class.

Third: With Distinction is awarded to those other students whose academic standing ranks them in the highest one tenth of the remainder of the class.

In computing these honors the formula for simple arithmetical average, adopted by the University Faculty as the honor formula, is the basis, and all work in residence enters into the computation, except in the College of Law where the residence work in law is considered. In order to be eligible the graduate must have completed at least 60 units of work at the University of Arizona.

The Juris Doctor degree, in so far as University Honors are concerned, is considered as an undergraduate degree, and candidates for such a degree who complete a minimum of 48 units in residence in law studies with sufficiently high scholarship may be awarded University Honors.
Graduate Honors

Upon recommendation of the Graduate Study Committee, candidates for advanced degrees may be graduated With Distinction in recognition of outstanding scholarship.

GIFTS TO THE UNIVERSITY

Gifts to the University may take the form of scholarships, material equipment, or endowment. Those wishing advice as to the needs of the University should address the President.

Suggested Forms of Bequests

**Absolute Bequest**—I give (devise) and bequeath to the University of Arizona and its successors forever the sum of .........................dollars (or otherwise describe the gift) for its general corporate purposes (or name a particular corporate purpose).

**Testamentary Trust Under a Mandatory Power—Bank or Trust Company Trustee**—I direct my executors, as soon after my death as shall be practicable (or trustees on the termination of the preceding private trust), on my behalf (and as a memorial to.................) to endow the University of Arizona in the sum of..........................dollars, or its equivalent in securities, by the creation of a charitable trust to be administered by a bank or trust company of their selection (or name such an institution), acting as trustee under the resolution and declaration of trust known as The Uniform Trust for Public Uses, to collect and pay over or apply the net income arising therefrom to the use of said beneficiary for its general corporate purposes (or name a particular corporate purpose).
UNIVERSITY ORGANIZATIONS

STUDENT BODY ORGANIZATION

For the purpose of assuming the privileges and responsibilities of self-government and the direction and control of student enterprises, the students are organized under the title, the Student Body Organization.

ASSOCIATED WOMEN STUDENTS

As each girl registers in the University of Arizona, she automatically becomes a member of the Associated Women Students. The object of this organization is to regulate all matters pertaining to the student life of its members which do not fall under the jurisdiction of the Faculty or the Student Body Organization.

HONORARY AND PROFESSIONAL ORGANIZATIONS

Phi Kappa Phi—National Honorary Scholastic Society, University
Phi Beta Kappa—National Honorary Scholastic Society, College of Liberal Arts
The Society of Sigma Xi—Science
Phi Delta Kappa—Education, men
Pi Lambda Theta—Education, women
Theta Tau—Engineering
American Association of Engineers—Engineering
American Society of Civil Engineers—Civil engineering
Alpha Kappa Psi—Commerce, men
Alpha Epsilon—Engineering, women
Delta Sigma Rho—Forensics
Alpha Zeta—Agriculture
Phi Alpha Delta—Law, men
Phi Delta Phi—Law, women
Kappa Beta Pi—Law, women
Phi Lambda Upsilon—Chemistry
Scabbard and Blade—Military
Sigma Delta Psi—Athletics
Delta Pi Sigma—Mathematics
Sigma Delta Pi—Spanish
Phi Mu Alpha—Music, men
Sigma Alpha Iota—Music, women
Mortar Board—Senior women
Hammer and Coffin—Humor, literary
Theta Alpha Phi—Dramatics
National Collegiate Players—Dramatics
Kappa Omicron Phi—Home economics
Blue Key—Honorary Junior and Senior men
Pi Nu Alpha—Journalism
Kappa Kappa Psi—Music, band
Alpha Rho Tau—Art

FRATERNITIES AND SORORITIES

Fraternities—Kappa Sigma, Sigma Alpha Epsilon, Sigma Nu, Sigma Chi, Phi Delta Theta, Pi Kappa Alpha, Delta Chi, Zeta Beta Tau, Beta Kappa, Delta Sigma Lambda, Alpha Tau Omega, Phi Gamma Delta.
Sororities—Pi Beta Phi, Kappa Alpha Theta, Kappa Kappa Gamma, Gamma Phi Beta, Delta Gamma, Chi Omega, Alpha Phi, Alpha Chi Omega, Alpha Phi Omega (local).

The interrelations of fraternities and sororities are controlled by the Men’s Interfraternity Council and the Women’s Panhellenic Association, respectively.

Each of the residence halls has its own organization for governmental and social purposes.

OTHER ORGANIZATIONS

"A" Club—Athletics
Women’s Athletic Association—Athletics
Wranglers—Literary
Bobcats—Senior men’s honor society
Chain Gang—Junior men’s honor society
F. S. T.—Junior women’s honor society
Sophs—Sophomore men’s honor society
Spurs—Sophomore women’s honor society
Varsity Villagers—Social
University Players—Dramatics
Women’s Press Club—Journalism

Departmental Organizations—A number of the departments of the University have departmental organizations, some open to all students in the department, some composed of students majoring in the department, and some have but a limited elected membership.

THE RELIGIOUS LIFE OF THE UNIVERSITY

Opportunities for religious worship in Tucson are ample. The churches of the city are the First Baptist; First Christian; University Christian; First Congregational; First Southern Baptist; Grace Episcopal; Grace Lutheran; First Methodist Episcopal; University Methodist Episcopal South; Trinity Presbyterian; Saint Augustine’s Cathedral; All Saints; SS. Peter and Paul; Seventh Day Adventist; Church of Jesus Christ of the Latter Day Saints; First Church of Christ, Scientist; Temple Emmanu-El; and a number of missions. Students are welcome at all the churches of the city. Several churches have trained workers devoting time to a special program for students.

University Concert and Lecture Series

In order that students may not only be provided with ample facilities for study under competent instructors but may also have the opportunity of hearing the best in music, drama, and lectures, the University sponsors the University Series. Upon the completion of registration, all students who are registered for 6 or more units of credit in the University are presented with a season ticket to the series.

THE STUDENT FORUM

The purpose of the Student Forum is to stimulate and co-ordinate the religious and social welfare activities of the campus and to this end encourages and promotes any group of students or Faculty members that wishes to meet informally to study and discuss some phase of human life that will enrich the individual or group.

Some of the activities that have been emphasized are chapel services, open forum on religion, economics, politics, and international and social
problems, faculty-student "get-togethers," and volunteer social service.

An executive committee is made up of two students and one Faculty member from each of the affiliated organizations. The executive committee elects a chairman at large and a part-time executive secretary, subject to the approval of the President of the University.

The Forum is instrumental in placing, particularly in the city of Tucson, a number of students who are in need of part-time employment. Men and women students who desire to apply for such work should call or write the Employment Secretary, Student Forum Office. The placement of students in part-time positions on the University campus is administered through the Appointment Office.

Individual Organizations of the Student Forum

The Newman Club is composed of Catholic students united in one bond of devotion to God, to church, and to country. Bimonthly meetings are held and topics of a religious and cultural nature are considered. Every third Sunday of the month following early mass and communion the Catholic students breakfast together and have a devotional program.

The Y.M.C.A. and Y.W.C.A. are fellowships of students and Faculty who are trying to follow principles of right living and high idealism. They are composed of a membership of all students who desire to participate in the individual or joint programs sponsored by these organizations. They also function as a clearing house for the Protestant churches of the city. An Advisory Board and Student Cabinet direct the activities. Both the Y.M.C.A. and Y.W.C.A. are affiliated with the National Student Christian Associations and the World Christian Federation. Each year delegates are sent to the various conferences sponsored by these student movements.

The Maimonidean Club, an organization for Jewish students, has regular meetings and frequent special programs of lectures and discussions.

STUDENT PUBLICATIONS

The Arizona Wildcat is an official publication of the Student Body Organization and is issued every Tuesday and Friday during the college year.

The Desert is the University yearbook, published each spring by the Junior class.

The Kitty-Kat, official humor magazine of the Student Body Organization, is published once each month during the college year.

ALUMNI ACTIVITIES

Alumni Association—The Alumni Association is functioning under a constitution which was adopted in May, 1923. The organization includes in its membership both graduates and former students. The usual officers are provided for in addition to the Regional Directors, who are appointed by the executive committee. It is the duty of the Regional Directors to develop local interest in respect to the undertakings of the University and the policies of the Alumni Association.

The voting privilege is restricted to those holding active membership, for which a life membership fee of $10 is charged. All students graduating from the University automatically become life members of the Alumni Association. Those students who are credited with 20 or more units of resident work are classed as associate members. Officers are elected at the annual meeting of the Association held during Commencement Week.
The officers of the Association for 1936-37 were:

**Alumni Association Officers**

President..........................................................................................................William R. Misbaugh, '22
Vice-President....................................................................................................Paul J. Cella, ex. '24
Secretary-Treasurer............................................................................................A. L. Slonaker, '21

**Executive Committee**

Kirke T. Moore, '05          Harold C. Tovrea, '24
George W. Chambers, ex. '23  Aaron Levy, '25

**Advisory Board**

**One-Year Term**                              **Two-Year Term**

Martin Gentry, '29                      Jack Duerson, '25
K. Berry Peterson, '21                  Wallace Clark, '29
Margaret Tait Boice, '24                William Pickrell, '16

**Three-Year Term**

James Mafeo, '17
Rouland W. Hill, '25
Lawson V. Smith, '28

**Editors, Arizona Alumnus**

Harold G. Wilson, '22
Don Phillips, '28
A. L. Slonaker, '21
Pearle Hart

**Alumni Secretary**—The duties of the Alumni Secretary are stated in the constitution of the Association as follows: To prepare a register containing the names and addresses of all alumni and former students of the University of Arizona; to edit and publish such newsletters or other publications as may be authorized by the Association; to serve as a medium of communication between the University and the alumni and among the alumni. Louis Slonaker, '21, is Alumni Secretary. The Alumni Office is Room 211, Administration Building.
REQUIREMENTS FOR GRADUATION

General Statement—The University offers four-year courses of literary and scientific study leading to the degrees of Bachelor of Arts and Bachelor of Science. Four-year courses of more technical study lead to the degree of Bachelor of Science in the specified fields of agriculture, business administration, home economics, and civil, electrical, mechanical, or mining engineering. A three-year course in law is offered in the College of Law, which, when based on two or more years of prelegal academic study, leads to the degree of Bachelor of Laws (LL.B.), and, when based upon completion of the course required for an arts degree, may lead to the degree of Juris Doctor (J.D.).

The College of Fine Arts offers four-year courses leading to the degrees of Bachelor of Fine Arts and Bachelor of Music.

The College of Education, based upon an admission requirement of two years of preprofessional work, offers a three-year course leading at the end of the second year to the degree of Bachelor of Arts in Education or of Bachelor of Science in Education, and at the end of three years to a Secondary Certificate.

The requirements for advanced degrees and for special professional degrees are stated under “The Graduate College,” page 129.

The Unit System—Credit toward degrees is given by means of a unit system which assigns to each course of instruction offered a certain number of units or credits. A unit usually represents one hour of classroom work a week for a semester and assumes three hours of application; it may stand for one hour of classroom work and two hours of preparation, or for three hours of laboratory work, or for such distribution as the particular course may demand.

Number of Units Required for Degrees—Candidates for degrees must meet the requirements both in number and kind of units, as outlined in the catalogue for the year of matriculation, or for the year of graduation, except that students who withdraw from the University for more than one semester will be graduated under the catalogue for the year in which they re-enter, or for the year of graduation.

Students who transfer from one college of the University to another must meet the requirements of the catalogue for the year in which the transfer is made or for the year of graduation.

The number of units required for graduation varies with the course chosen, as shown in the following summary:

<table>
<thead>
<tr>
<th>Degrees</th>
<th>Units required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Arts</td>
<td>125</td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td>125</td>
</tr>
<tr>
<td>Bachelor of Science in Business Administration</td>
<td>125</td>
</tr>
<tr>
<td>Bachelor of Science in Public Administration</td>
<td>125</td>
</tr>
<tr>
<td>Bachelor of Arts in Education</td>
<td>125</td>
</tr>
<tr>
<td>Bachelor of Science in Education</td>
<td>125</td>
</tr>
<tr>
<td>Bachelor of Fine Arts</td>
<td>125</td>
</tr>
<tr>
<td>Bachelor of Arts in Speech</td>
<td>125</td>
</tr>
<tr>
<td>Bachelor of Music</td>
<td>125</td>
</tr>
<tr>
<td>Bachelor of Science in Agriculture</td>
<td>130</td>
</tr>
<tr>
<td>Bachelor of Science in Home Economics</td>
<td>130</td>
</tr>
<tr>
<td>Bachelor of Science in Civil Engineering</td>
<td>140</td>
</tr>
<tr>
<td>Bachelor of Science in Electrical Engineering</td>
<td>140</td>
</tr>
<tr>
<td>Bachelor of Science in Mechanical Engineering</td>
<td>140</td>
</tr>
<tr>
<td>Bachelor of Science in Mining Engineering</td>
<td>140</td>
</tr>
<tr>
<td>Bachelor of Laws (Arts and Sciences, 60; Law, 78)</td>
<td>138</td>
</tr>
<tr>
<td>Juris Doctor (Arts and Sciences, 125 [Degree]; Law, 78)</td>
<td>203</td>
</tr>
</tbody>
</table>

All courses leading to a degree must include 4 units of military science and tactics and 1 unit of physical education for men, and 4 units of physical education and 1 unit of Social Fundamentals for women.
Quality of Work—A student pursuing his entire course in this University must attain a grade of better than 4 in 80 per cent of the minimum number of units required for the bachelor’s degree sought, and in the colleges of Liberal Arts and Education must meet a similar requirement in courses completed in his major subject. The number of units to be completed with a grade above 4, by students carrying the entire course in residence, is as follows: For degrees in the College of Mines and Engineering, 112 units; in the College of Agriculture, 104 units; in the College of Liberal Arts, 100 units; in the College of Education, 100 units; in the College of Law, 62 units of law; in the College of Fine Arts, 100 units. A student transferring advanced credits to this University must attain a grade of better than 4 in 80 per cent of the units, which such student must secure by courses of study pursued in this University in order to meet the minimum requirements of this University for the bachelor’s degree sought, and in the colleges of Liberal Arts and Education must meet a similar requirement in his major subject.

Residence—All candidates for a bachelor’s degree must do the work of the Senior year in residence at this University. It is provided, however, that candidates for degrees, other than those in law, who already have had at least a full year’s work in residence in this institution, may do as much as 4 units of Senior work in absentia. Senior work in all colleges except the College of Law is defined to be the last 30 units and in the College of Law the last 24 units of credit in courses done by a student in fulfilling the requirements for graduation. The minimum length of residence for graduation is thirty-six weeks.

Application for Graduation—Juniors are expected to file at the Registrar’s office an application for candidacy for a degree by May 15 of the Junior year. In the event that such applications are not so filed, a fee of $2 will be charged. Blank forms are obtained at the office of the Registrar.

A Special Student, registered in a college other than the College of Law, who is at least twenty-five years of age, may, by permission of the Faculty, become a candidate for a degree, subject to the fulfillment of such requirements regarding entrance deficiencies as may be determined by the Faculty.
REQUIREMENTS FOR DEGREES
IN THE SEVERAL COLLEGES

COLLEGE OF AGRICULTURE

The general course in agriculture is organized to give a broad foundation in the sciences and allied subjects and then, through a system of group requirements, to lead to a specialized training in one field of agricultural endeavor. This is the foundation required for those who desire to go on in university or college teaching, government or experiment station research, or it may lead directly to research or administrative positions in agricultural enterprises. Where the necessary capital is available it also prepares for the direct return to the farm. For those who desire to teach agriculture in secondary schools the course in vocational agriculture, page 74, is provided.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Freshman and Sophomore work</td>
<td>60</td>
</tr>
<tr>
<td>Required from the major subject*</td>
<td>16</td>
</tr>
<tr>
<td>Required from the major groupings</td>
<td>30</td>
</tr>
<tr>
<td>Electives from the humanities and languages</td>
<td>10</td>
</tr>
<tr>
<td>Free electives</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total required for graduation</strong></td>
<td><strong>130</strong></td>
</tr>
</tbody>
</table>

The list of science requirements will be given under each major group. The 10 units in the humanities and languages should be selected from the courses in economics, education, history, philosophy, psychology, English, a modern language, or speech.

Students planning to enter the research field should start either French or German in their Sophomore year. They may defer one science course to the Junior year in order to do this. Two years of language are necessary.

A major group consisting of 16 units must be chosen not later than the beginning of the Junior year. In planning his work the student should consult his major professor with reference to courses and their proper sequence.

Major Fields of Study

The major may be chosen in any of the following fields of work:

- Agricultural chemistry and soils
- Agricultural economics and rural sociology
- Agricultural education
- Agricultural engineering
- Agronomy
- Animal husbandry
- Botany
- Dairy husbandry
- Entomology and economic zoology
- Horticulture
- Plant breeding
- Plant pathology
- Poultry husbandry

* At the discretion of the major professor, certain courses not given in his department may be used to meet this requirement.
COURSES LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE

Freshman Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>First Semester</th>
<th>Units</th>
<th>Second Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1a (Composition)</td>
<td>3</td>
<td></td>
<td>English 1b (Composition)</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 1a or 2a (General)</td>
<td>4</td>
<td></td>
<td>Chemistry 1b or 2b (General)</td>
<td>4</td>
</tr>
<tr>
<td>Zoology 4 (Elem.)</td>
<td>4</td>
<td></td>
<td>Botany 1 (General)</td>
<td>4</td>
</tr>
<tr>
<td>Agronomy 1*</td>
<td>2</td>
<td></td>
<td>Animal Husbandry 1*</td>
<td>2</td>
</tr>
<tr>
<td>Dairy Husbandry 1*</td>
<td>2</td>
<td></td>
<td>Horticulture 1*</td>
<td>2</td>
</tr>
<tr>
<td>Military Science 1a</td>
<td>1</td>
<td></td>
<td>Military Science 1b</td>
<td>1</td>
</tr>
<tr>
<td>Phys. Ed. 25</td>
<td></td>
<td>1/2</td>
<td>Phys. Ed. 27</td>
<td>1/2</td>
</tr>
</tbody>
</table>

Total: 16 1/2

Sophomore Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>First Semester</th>
<th>Units</th>
<th>Second Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 17a (Gen. Phys.)</td>
<td>4</td>
<td></td>
<td>Math. 70a (Math. of Bus.)</td>
<td>4</td>
</tr>
<tr>
<td>Bacteriology 107 (Gen. Bact.)</td>
<td>4</td>
<td></td>
<td>Animal Husb. 116 or Bot. 103.</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 40</td>
<td>4</td>
<td></td>
<td>Economics 1a (Intro. to)</td>
<td>1</td>
</tr>
<tr>
<td>Poultry Husb. 1*</td>
<td>2</td>
<td></td>
<td>Military Science 2b</td>
<td>1</td>
</tr>
<tr>
<td>Military Science 2a</td>
<td>1</td>
<td></td>
<td>Electives</td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td>Total</td>
<td>18</td>
</tr>
</tbody>
</table>

Total: 18

SUGGESTED COURSES FOR MAJOR GROUPINGS

Thirty units must be selected from the major group courses indicated below or other courses closely related to the applied field. Not more than 15 units of agricultural subjects may be selected by students desiring a general training in agriculture.

Plant Industry Majors

Chemistry 54; Agricultural Chemistry 101, 111; Bacteriology 121; Botany 2, 4, 123, 132, 142, 223; Plant Breeding 108, 128; Plant Pathology 105, 145 or 155; Agricultural Engineering 101, 105; Zoology 101, 102; Agricultural Economics 101; Geology 1.

Animal Industry Majors

Chemistry 54, 103 (omitting 40), 115; Zoology 8, 45, 147; Bacteriology 157; Botany 4, 6, 103, 108; Economics 195a-195b; Agricultural Chemistry 101, 111; Agricultural Engineering 1, 105; Agronomy 101; Dairy Husbandry 103; Poultry Husbandry 101, 103; Animal Husbandry 104, 105, and 113.

Agricultural Chemistry and Soils Majors

Chemistry 3, 54, 106a-106b, 115; Mathematics 24, 25, 100a-100b; Agricultural Engineering 105, 110; Botany 123, 223; Plant Pathology 105; Plant Breeding 108; Horticulture 102, 103; Agronomy 101, 102; Geology 1.

Agricultural Engineering Majors

Physics 17b; Agricultural Chemistry 101, 111, 141; Mathematics 20, 24, 25; Mechanical Arts 1, 32, 107; Agronomy 103, 104; Horticulture 102, 107, 108, 110; Geology 1a-1b; Civil Engineering 1; Agricultural Economics 101, 103.

Botany, Entomology, and Economic Zoology Majors

Chemistry 103 (omitting 40); Agricultural Chemistry 101; Zoology 44, 57, 101 or 146; Horticulture 102; Botany 2, 4, 6, 103, 116, 123, 124, 132, 142, 222, 223, 234; Plant Breeding 108; Plant Pathology 105, 145.

* Not required of students majoring in agricultural chemistry, agricultural engineering, botany, entomology, and economic zoology.
COURSES FOR TEACHERS OF VOCATIONAL AGRICULTURE AND HOME ECONOMICS

Students desiring to qualify as teachers of vocational agriculture or home economics must complete a four-year technical course in the College of Agriculture, including the courses in education specified in the courses of study outlined for their respective fields.

The following courses lead to the degree of Bachelor of Science in Agriculture or Home Economics* and to certification for teaching vocational agriculture or home economics under the Smith-Hughes Act.

COURSES LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE, WITH A MAJOR IN AGRICULTURAL EDUCATION

Freshman and Sophomore Years

The same as the general course in agriculture except that Psychology 1 and Agricultural Engineering 1 take the place of the electives in the second semester of the Sophomore year. For requirements for a Secondary Certificate see page 80.

Junior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agr. Chem. 101 (Soil Physics)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Animal Husb. 104 (Nutr.)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ed. 134 (H. S. Methods)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ed. 151 (Ed. Psych.)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agric. Econ. 105 (Farm Mgt.)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Zoology 101 (Gen. Entom.)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Agr. Chem. 121† (Soil Bact.)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

SCHOOL OF HOME ECONOMICS

Courses in home economics are offered with the following students in mind:

Students who wish a broad cultural education for homemaking and those who wish a background in the necessary sciences and arts which will prepare them for specialization in some field of endeavor such as college teaching, commercial positions, social service, institution management, or extension work.

Students preparing to teach home economics in grade or secondary schools. (See course in home economics education.)

Students who wish to specialize in textiles, clothing, and related art as preparation for work in the commercial field.

* For course leading to the degree of Bachelor of Science in Home Economics with a major in home economics education, see pages 75 and 76.
† Students in agriculture with a major in agricultural education register for lectures only which carry 2 units credit.
Students who wish to specialize in food and nutrition for the following purposes:
1. Graduate study leading to advanced degrees.
2. Research work in university or commercial field.
3. Teaching foods and nutrition in high school or college.
4. Position as nutrition specialist, dietitian, or public health worker.

Home Economics Minor

A minor in home economics for students in other colleges may consist of 20 units chosen in consultation with the Director of the School.

Graduate Work in Home Economics

Two classes of graduate students are recognized:
1. Those wishing to take 30 units of graduate work beyond the bachelor's degree in order to meet state certification requirements.
2. Those wishing to become candidates for an advanced degree. Candidates for the master's degree must conform with the requirements of the Graduate College as stated on page 129. Candidates for a degree may secure the Master of Science in Nutrition or in Foods and Nutrition, and the Master of Arts in Household Economics.

COURSES LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN HOME ECONOMICS

The requirements for this degree are as follows:

The requirements for the first two years of work are the same for all students except for those specializing in foods and nutrition.

Freshman Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1a (Composition)</td>
<td>3</td>
</tr>
<tr>
<td>Home Ec. 1 (Foods)</td>
<td>3</td>
</tr>
<tr>
<td>Home Ec. 2 (Nutrition)</td>
<td>2</td>
</tr>
<tr>
<td>Social Fundamentals</td>
<td>1</td>
</tr>
<tr>
<td>Art 1a (Art and Design)</td>
<td>2</td>
</tr>
<tr>
<td>Phys. Ed. 1a</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>16-15</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 2a (General)</td>
<td>4</td>
</tr>
<tr>
<td>English 1b (Composition)</td>
<td>3</td>
</tr>
<tr>
<td>Home Ec. 44 (Clothing)</td>
<td>3</td>
</tr>
<tr>
<td>Home Ec. 45 (Costume Selection)</td>
<td>2</td>
</tr>
<tr>
<td>Foreign lang. or hist.</td>
<td>4-3</td>
</tr>
<tr>
<td>Intro. to Humanities</td>
<td>4</td>
</tr>
<tr>
<td>Art 2a (Art and Design)</td>
<td>2</td>
</tr>
<tr>
<td>Phys. Ed. 2b (Light Gym.)</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>17-16</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 40 (Organic)</td>
<td>4</td>
</tr>
<tr>
<td>Intro. to Humanities</td>
<td>4</td>
</tr>
<tr>
<td>Economics 1a (Intro. to)</td>
<td>3</td>
</tr>
<tr>
<td>Sociology</td>
<td>3</td>
</tr>
<tr>
<td>Physics Ed. 2a (Light Gym.)</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 52 (Applied)</td>
<td>3</td>
</tr>
<tr>
<td>Intro. to Humanities</td>
<td>4</td>
</tr>
<tr>
<td>Home Ec. 11 (Foods)</td>
<td>3</td>
</tr>
<tr>
<td>Sociology</td>
<td>3</td>
</tr>
<tr>
<td>Phys. Ed. 2b (Light Gym.)</td>
<td>1</td>
</tr>
<tr>
<td>Psychology 1a (Elem.)</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
</tr>
</tbody>
</table>
GENERAL COURSE
Junior and Senior Year

Major Group

From which 16 units must be selected:
Home Economics 96, 102, 106, 115, 116, 127, 131, 137, 144, 145, 146, 156.

Suggested Courses

From which 30 units must be selected:
Bacteriology 67, 107, 137; Zoology 4, 144; Psychology 1b, 15; Home Economics 104, 112, 122, 132; or others from above group.

Suggested Electives

Art 101a; Botany 1; Education 150; English; History; Music 1a; Physical Education 84; Sociology 183a-183b; Spanish; Speech 2a-2b; Zoology 114.

MAJOR IN HOME ECONOMICS EDUCATION

Junior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>First Semester</th>
<th>Units</th>
<th>Subject</th>
<th>Second Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Ec. 102 (Nutr.)</td>
<td>4</td>
<td>Zoology 144 (Mamm. Physiology)</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Ec. 156 (Housing Probs.)</td>
<td>2</td>
<td>Home Ec. 115 (Home Furn.)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Ec. 131 (Exper. Cookery)</td>
<td>3</td>
<td>Ed. 134 (H. S. Methods)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed. 151 (Ed. Psych.)</td>
<td>3</td>
<td>Home Ec. 144 (Clothing Probs.)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>3-5</td>
<td>Ed. 109 (Voc. Ed.)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15-17</td>
<td>Electives</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>First Semester</th>
<th>Units</th>
<th>Subject</th>
<th>Second Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Ec. 106 (Household Ec.)</td>
<td>2</td>
<td>Home Ec. 116 (Home Mgt.)</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Ec. 127 (Child Dev.)</td>
<td>3</td>
<td>Home Ec. 137 (The Family)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed. 197g (H. E. Methods)</td>
<td>3</td>
<td>Home Ec. 146 (Consumer &amp; Mkt.)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bact. 107 (Gen. Bact.)</td>
<td>4</td>
<td>Ed. 199b* (Appren. Teach.) or electives</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed. 199b* (Appren. Teach.) or electives</td>
<td>5</td>
<td>Total</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Suggested Electives

Electives taken during the Junior and Senior years should be so chosen as to constitute a teaching minor. Desirable fields are English, science, social studies, physical education, and Spanish.

MAJOR IN TEXTILES, CLOTHING, AND RELATED ART

Junior and Senior Year

Major Group

From which 16 units must be selected:

Suggested Courses

Art 7a-7b; History 17a-17b; Home Economics 125, 127, 135, 137, 146; Psychology 1b, 15, or others from above group.

*Taken one semester.
Suggested Electives

Art 2a-2b; Anthropology 1a-1b, 103, 104, 108; Bacteriology 107; Chemistry 1b; Education 134, 161, 197g, 199b; English 126, 129, 131; French 3; Horticulture 1, 105; Home Economics 106, 131, 156; Music 1, 102; Psychology 22; Zoology 144.

MAJOR IN FOODS AND NUTRITION

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Freshman and Sophomore work</td>
</tr>
<tr>
<td>Scientific work selected from Junior and Senior list</td>
</tr>
<tr>
<td>Required for the supporting group</td>
</tr>
<tr>
<td>Free electives</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Freshman Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>Units</td>
</tr>
<tr>
<td>Chemistry 1a or 2a (General)</td>
<td>4</td>
</tr>
<tr>
<td>English 1a (Composition)</td>
<td>3</td>
</tr>
<tr>
<td>Home Ec. 2 (Nutrition)</td>
<td>2</td>
</tr>
<tr>
<td>Home Ec. 1 (Foods)</td>
<td>3</td>
</tr>
<tr>
<td>Phys. Ed. 1a</td>
<td>1</td>
</tr>
<tr>
<td>Social Fundamentals</td>
<td>3-4</td>
</tr>
<tr>
<td>Hist. or foreign lang.</td>
<td>3-4</td>
</tr>
<tr>
<td>Total</td>
<td>17-18</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>Units</td>
</tr>
<tr>
<td>Chemistry 103a or 40</td>
<td>4</td>
</tr>
<tr>
<td>Home Ec. 131 (Exp'l Cookery)</td>
<td>3</td>
</tr>
<tr>
<td>Zoology 8 (Elementary)</td>
<td>4</td>
</tr>
<tr>
<td>Sociology 81</td>
<td>3</td>
</tr>
<tr>
<td>Phys. Ed. 2a</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
</tr>
<tr>
<td>(Speech 5 or H. E. 45 suggested)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
</tr>
</tbody>
</table>

Suggested Courses for Supporting Group

From which 30 units not offered for lower division credit must be selected:

Chemistry 3; Psychology 1b, 15, 22, 105, 111, 112, 118; Physics 17; Zoology 8, 45, 111, 114, 116, 143, 147, 149; Bacteriology 67, 107, 137, 157; Home Economics 96, 106, 111, 116, 127, 137, 141, 146; Mathematics 20, 24, 100, 103; Education 150, 151, 254; Business Administration 31a; Sociology 81, 181, 182, 183, 184, 186; Ag. Econ. and Rural Soc. 102.

Major Courses

From which at least 16 units must be selected:

Home Economics 102, 112, 122, 132, 142, 201, 202, 212, 231; Chemistry 115.

Suggested Electives

English, history, education, advanced German or French, Music Appreciation, Speech 5, Home Economics 45, 104, 115.

* Courses required of students applying for admission to hospital-training courses approved by the American Dietetic Association.
COLLEGE OF EDUCATION

The College of Education is the administrative division of the University, organized to meet the needs of the state in the preparation, training, and certification of teachers, supervisors, and administrative school officers. All students seeking teaching certificates other than Special Certificates must be registered in the College of Education.

The courses of study are based upon the assumption that every teacher or school officer needs and should have: (1) a broad and liberal education; (2) thorough and substantial scholarship in the subjects he intends to teach; (3) supplemental to this education, adequate professional training and study designed to give a knowledge of the pupils to be taught, the problems to be met in the art of teaching, and the new meanings of the subjects of instruction. For the prospective teacher, this policy places the emphasis upon the subjects he intends to teach. The student selects a major subject or field and one or more minor subjects or fields which he plans to teach, and takes education as an auxiliary professional study. Those preparing to be supervisors and school executives, however, should select education as their major subject, either as part of a four-year course leading to a degree or, preferably, in addition to such a course.

As organized at present, the College of Education, with the co-operation of other colleges in the University, offers courses along the following lines, each course preparing for a definite type of position.

I—Division of Secondary Education, preparing:
   (a) Teachers and heads of departments in academic subjects in high schools and junior high schools.
   (b) Principals for junior and senior high schools.
   (c) Athletic coaches and teachers of physical education in junior and senior high schools.

II—Division of Elementary Education, preparing:
   (a) Teachers for elementary and junior high schools.
   (b) Principals for elementary and junior high schools.

III—Division of Supervision and Administration, preparing:
   (a) Supervisors, superintendents, and principals for city school systems.
   (b) Supervisors, superintendents, and principals for county (rural) school systems.
   (c) Supervisors of physical education in public schools.
   (d) Advisers of girls and deans of women.

IV—Division of Educational Research:
   (a) Directors of research for school systems.
   (b) Directors of educational and vocational guidance.

ADMISSION

Candidates for admission to the College of Education must present not less than 60 units of college credit with a general average grade of 3 or better. The work offered for admission must be in essential agreement with the sequence given on page 82, so that the candidate will be able to meet the requirements for graduation as set forth in Summary I, II, III, or IV.

TEACHERS OF PHYSICAL EDUCATION

The State Board of Education has made the teaching of physical education in all public schools of the state compulsory. In order to meet the potential demand that may develop as a result of this ruling the College of Education offers its students the opportunity of selecting physical education for men or physical education for women as their major subject.
Summaries of the requirements in these courses will be listed later. Detailed descriptions of the courses will be found under the departments of Physical Education for Men and Physical and Health Education for Women, respectively.

TEACHERS' CERTIFICATES

The University of Arizona, through the College of Education, offers complete educational programs for Elementary, Secondary, and Administrative certificates.

Graduation from the College of Education supplemented by 30 units of approved graduate work fulfills all requirements of the State Board of Education for the Secondary Certificate. The requirements for graduation from the College of Education also meet the standards of the North Central Association of Colleges and Secondary Schools in respect to professional study in education and the proper selection of subject-matter courses for purposes of high-school teaching. In view of the prevailing tendency in the various states to increase the number of units in education required for certification, students are advised to secure credit in not less than 20 or 21 units in education, and in addition Psychology 1a (Elementary Psychology). Secondary Certificates based on the bachelor's degree will be subject to renewal until July 1, 1946. After that date the new requirements must be met.

Elementary Certificates will be granted on evidence of the bachelor's degree with specified work as set forth in the certification requirements. Graduates of a two-year course in an approved normal school or teacher's college who hold valid Arizona certificates may qualify for the three-year elementary certificate by completing an additional 30 units of third-year college work in a standard college or university. Teachers now holding such two-year Arizona certificates must meet this requirement prior to January 1, 1940. Elementary Certificates based on a three-year course will be subject to renewal until July 1, 1946. By that date the present new requirements must have been met.

Administrative Certificates are granted upon evidence of: (1) a minimum of three years of successful teaching experience; (2) eligibility for an elementary or a secondary certificate; (3) a minimum of 15 units in education, in addition to and after securing the Baccalaureate Degree, devoted to school organization, administration, and supervision.

It is recommended that candidates in meeting the requirements for the Administrative Certificate include the following courses for the respective administrative positions:

- County superintendency: 121, 201, 254a, 257, 262, 271, 276.
- City superintendency: 121, 201, 238, 254a, 257, 260a, 260b, 271, 276.
- Town principalship or superintendency: 201, 236, 238, 254a, 257, 271, 276.
- High-school principalship: 201, 236, 238, 254a, 257, 276.
- Elementary principalship: 121, 201, 227, 238, 254a, 257, 276.

The College of Education offers excellent opportunity to prospective teachers of all levels above the kindergarten. Full information concerning certification requirements may be secured from the Dean.

REQUIREMENTS FOR THE DEGREES OF BACHELOR OF ARTS IN EDUCATION AND BACHELOR OF SCIENCE IN EDUCATION*

Candidates for graduation from the College of Education who have selected physical education, commercial subjects, or some field of science as their major subject will receive the degree of Bachelor of Science in Education. Those who have selected other subjects as their majors will

* Deviations from any of the requirements that follow may be made only with the advice and consent of the Dean of the College of Education.
receive the degree of Bachelor of Arts in Education. The requirements for graduation follow:

I. A major for students in the College of Education is the principal subject which the student desires to teach. It must be selected with the advice of the Dean of the College of Education. It consists of a minimum of 24 units in the subject selected. The specific requirements for a major are listed under the several departments.

A supporting minor consists of 20 units in a group of subjects selected to supplement the major. It must be selected with the advice of the head of the department in which the major is chosen.

A teaching minor consists of 15 to 20 units in a single subject which the student plans to teach. The minor subject is chosen in conference with the Dean of the College of Education. A supporting minor may or may not fulfill the requirements of a teaching minor.

II. Students in the College of Education who are candidates for Secondary Certificates must have a major and a teaching minor in subjects usually taught in high schools, or a major in a non-high-school field and two teaching minors in subjects usually taught in high schools. It is strongly recommended that students have a major and two teaching minors under all circumstances.

The “high-school” subjects from which students may select their majors or teaching minors are:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Major Subject</th>
<th>Teaching Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art</td>
<td>English</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Botany</td>
<td>French</td>
<td>Music</td>
</tr>
<tr>
<td>Chemistry</td>
<td>German</td>
<td>Physical Ed.</td>
</tr>
<tr>
<td>Commercial</td>
<td>History</td>
<td>Physical Ed. for men</td>
</tr>
<tr>
<td>subjects</td>
<td>Journalism</td>
<td>Physical Ed. for women</td>
</tr>
<tr>
<td>Economics</td>
<td>Latin (minor)</td>
<td>Political science</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Psychology</td>
</tr>
</tbody>
</table>

III. Mature students who have had experience in teaching and who desire to prepare for supervisory or administrative positions, and students transferring from normal schools or teachers' colleges with a large number of units in education should select education as their major subject and select as teaching minor subjects some other subjects which have bearing upon their chosen fields of work. Education may be selected as a minor subject only with the permission of the Dean of the College of Education.

IV. The major subject should be selected not later than the beginning of the Sophomore year, and the work done in the major subject must be distributed through at least five semesters. The teaching minor must be selected not later than the beginning of the Junior year.

V. Subject to the restrictions above, a student may change his major subject at the beginning of any semester by filing with the Registrar a request approved by the heads of the two departments concerned and the Dean of the College of Education.

DEPARTMENTAL HONORS

The College of Education and the College of Liberal Arts offer Seniors an opportunity to become candidates for Departmental Honors. The purpose of instituting Departmental Honors is to encourage capable and ambitious students to develop a comprehensive point of view and to acquire a comprehensive type of scholarship. The work leading to Departmental Honors fosters and demands student initiative and the capacity to interrelate materials in closely related fields. The student who successfully completes the work for Departmental Honors will have a well-rounded knowledge of the subject of his major interest, its fundamentals,
implications, and important relationships. The test for satisfactory completion is a comprehensive final examination covering the work outlined above.

Registration for honors in the chosen field such as “Education Honors,” “English Honors,” etc. is open to any Senior who can present a reasonable one-year program leading to the completion of his major. The procedure to be followed in determining the ultimate candidacy of students for honors is under the direction of the respective departments. A co-ordinating Honors Committee composed of representatives of the faculties of both colleges approve for honors in their respective departments those who have satisfactorily met the requirements.

A more detailed statement concerning honors courses and the comprehensive examination will be found on page 114.

PROFESSIONAL STUDIES

I. Each candidate for graduation must present a minimum of 18 units in education as indicated in the following outlines, and in addition Psychology 1a (Elementary Psychology).

II. Each candidate for a teacher’s certificate must demonstrate a knowledge of the constitution of the United States and of Arizona. This requirement may be satisfied by taking Political Science 100, either in class or by correspondence (or Political Science 51 and Political Science 62), or by passing the examinations in the two constitutions prior to graduation. If this requirement is met by examination a certificate to that effect must be presented to the Registrar before the candidate’s record will be cleared for graduation.

FOREIGN LANGUAGE

Since the primary purpose of the foreign language requirement is to insure a reasonable familiarity with at least one foreign language, students who demonstrate the ability to translate readily literature of ordinary second-year difficulty may be exempted from further foreign language study.

SPECIFIC LIMITATIONS

Candidates for graduation from the College of Education are subject to the following restrictions:

I. Not more than 48 units may be taken for credit in any one department.

II. At least 40 of the units offered in satisfaction of the requirements for a degree must be in courses numbered 100 or over.

III. A maximum of 8 units in applied music and 16 units in military science will be accepted toward a degree.

COURSES IN THE COLLEGE OF EDUCATION

All candidates for graduation from the College of Education should plan their work carefully in accordance with the general sequence outlined below.

Though candidates for the Secondary Certificate do not register in the College of Education until their Junior year, the Dean of the College of Education invites all such students to confer with him at any time concerning requirements.

Those taking education as a major will find the required courses listed under Education. Descriptions of all courses will be found under the respective departments.
### Freshman Year
(Taken in Liberal Arts)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1a (Composition)</td>
<td>3</td>
<td>English 1b (Composition)</td>
<td>3</td>
</tr>
<tr>
<td>Foreign language</td>
<td>4</td>
<td>Foreign language</td>
<td>4</td>
</tr>
<tr>
<td>Science</td>
<td>4</td>
<td>Science</td>
<td>4</td>
</tr>
<tr>
<td>Mil. Sci. 1a, P.E. 25 or 26 (Men)</td>
<td>1½</td>
<td>Mil. Sci. 1b, P.E. 27 or 29 (Men)</td>
<td>1½</td>
</tr>
<tr>
<td>Social Fundamentals (Women)</td>
<td>1</td>
<td>Phys. Ed. 1b (Women)</td>
<td>1</td>
</tr>
<tr>
<td>Electives*</td>
<td>2-3</td>
<td>Electives*</td>
<td>2-3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>14½–16</td>
<td><strong>Total</strong></td>
<td>14–15½</td>
</tr>
</tbody>
</table>

### Sophomore Year
(Taken in Liberal Arts)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intro. to Humanities</td>
<td>4</td>
<td>Intro. to Humanities</td>
<td>4</td>
</tr>
<tr>
<td>Psychology 1a (Elem. Psych.)</td>
<td>3</td>
<td>Foreign language</td>
<td>4</td>
</tr>
<tr>
<td>Foreign language</td>
<td>4</td>
<td>Mil. sci. or phys. ed.</td>
<td>1</td>
</tr>
<tr>
<td>Major and minor subject†</td>
<td></td>
<td>Major and minor subject†</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>Electives</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15–16</td>
<td><strong>Total</strong></td>
<td>15–16</td>
</tr>
</tbody>
</table>

(Upon Admission to the College of Education)

### Junior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ed. 131 (The High School) (See Sum. I for substitutions)</td>
<td>3</td>
<td>Ed. 134 (Gen. H. S. Meth.) (See Sum. I for substitutions)</td>
<td>3</td>
</tr>
<tr>
<td>Education 151 (Ed. Psych.)</td>
<td>3</td>
<td>Ed. 197 (Teachers' Course)</td>
<td>3</td>
</tr>
<tr>
<td>Major and minor subject†</td>
<td></td>
<td>Pol. Sci. 100† (Constitutions)</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>Major and minor subjects†</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>16</td>
<td><strong>Total</strong></td>
<td>16</td>
</tr>
</tbody>
</table>

### Senior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ed. 157 (Tests and Meas.)</td>
<td>3</td>
<td>Ed. 199† (Appren. Teach.)</td>
<td>8</td>
</tr>
<tr>
<td>Ed. 197† (Teachers' Course)</td>
<td>3</td>
<td>Major and minor subjects§</td>
<td></td>
</tr>
<tr>
<td>Major and minor subjects§</td>
<td></td>
<td>Electives</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td><strong>Total</strong></td>
<td>16</td>
</tr>
</tbody>
</table>

* Six units in social science are required for graduation. They may be taken at any time. See summaries.
† See page 80, "Requirements," also Note 1 under Summary I, page 84.
‡ May be taken in either Junior or Senior year.
§ Some of these courses may be taken in the second semester of the Junior year, others, the first or second semester of the Senior year (see description of courses).
∥ Apprentice teaching may be arranged for either semester of the Senior year, depending upon the student's program and the available opportunities for the work.
### Summary I

**For teachers of academic subjects:**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education: 131 (or 121 or 141), 134 (or 124), 151, 157, 197, 199</td>
<td>20</td>
</tr>
<tr>
<td>English: 1a, 1b</td>
<td>6</td>
</tr>
<tr>
<td>Foreign language: French, German, Greek, Latin, or Spanish— one language</td>
<td>16</td>
</tr>
<tr>
<td>Introduction to Humanities</td>
<td>8</td>
</tr>
<tr>
<td>Military science and physical education (men); Social Fundamentals and physical education (women)</td>
<td>5</td>
</tr>
<tr>
<td>Psychology: 1a</td>
<td>3</td>
</tr>
<tr>
<td>Science: astronomy, biology (botany, entomology, zoology), chemistry, geology, mathematics, mineralogy, or physics—one subject (see Note 2)</td>
<td>8</td>
</tr>
<tr>
<td>Political science: 100 (see Professional Studies, page 82)</td>
<td>3</td>
</tr>
<tr>
<td>Social science: anthropology, economics, philosophy, psychology, sociology, history, or political science. In not more than two subjects, see Note 3</td>
<td>6</td>
</tr>
</tbody>
</table>

Total required units: 75  
Total elective units: 50  
Total for graduation: 125

**Notes:**

1. The major and minor subjects as described in Requirements I, page 81, may be included entirely in the elective group above or may be included partly in the elective group and partly in the required group.

2. The general course in Physical Sciences may be used to satisfy the science requirement by those not majoring in a physical science.

3. The general course in Social Science Survey and the following courses in philosophy and psychology are acceptable as social science: Philosophy 11, 20, 101a, 101b, 120, 126; Psychology 15, 105a, 105b, 112, 118.

### Summary II

**For teachers and directors of physical education for men:**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education: 131 (or 121 or 141), 134 (or 124), 151, 157, 197, 199</td>
<td>20</td>
</tr>
<tr>
<td>English: 1a, 1b</td>
<td>6</td>
</tr>
<tr>
<td>Foreign language: French, German, Greek, Latin, or Spanish— one language</td>
<td>16</td>
</tr>
<tr>
<td>Introduction to Humanities</td>
<td>8</td>
</tr>
<tr>
<td>Military science: 1a, 1b, 2a, 2b.</td>
<td>4</td>
</tr>
<tr>
<td>Physical education: 25 (or 26), 27 (or 29)</td>
<td>1</td>
</tr>
<tr>
<td>Physical education: 162, 169, and additional to make</td>
<td>24</td>
</tr>
<tr>
<td>Political science: 100 (see Professional Studies, page 82)</td>
<td>3</td>
</tr>
<tr>
<td>Psychology: 1a</td>
<td>3</td>
</tr>
<tr>
<td>Social sciences: (See Summary I)</td>
<td>6</td>
</tr>
<tr>
<td>Zoology: 4, 8, 57</td>
<td>12</td>
</tr>
</tbody>
</table>

Total required units: 103  
Total elective units: 22  
Total for graduation: 125

**Note:** With the permission of the Department, students majoring in physical education may substitute Education 110, Home Economics 2, and Psychology 112 for 8 units of foreign language.
### Summary III

For teachers and directors of physical and health education for women:

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteriology: 67, 137</td>
<td>4</td>
</tr>
<tr>
<td>Education: 131 (or 121 or 141), 134 (or 124), 151, 157, 197n, 197r, 199</td>
<td>23</td>
</tr>
<tr>
<td>English: 1a, 1b</td>
<td>8</td>
</tr>
<tr>
<td>Introduction to Humanities</td>
<td>1</td>
</tr>
<tr>
<td>Home economics: 2</td>
<td>2</td>
</tr>
<tr>
<td>Physical and health education: 1a, 1b, 2a, 2b</td>
<td>4</td>
</tr>
<tr>
<td>Physical and health education</td>
<td>24</td>
</tr>
<tr>
<td>Theory courses</td>
<td>8</td>
</tr>
<tr>
<td>Methods and materials courses</td>
<td>8</td>
</tr>
<tr>
<td>Activity courses above 2b</td>
<td>8</td>
</tr>
<tr>
<td>Political science: 100 (see Professional Studies, page 82)</td>
<td>3</td>
</tr>
<tr>
<td>Psychology: 1a</td>
<td>3</td>
</tr>
<tr>
<td>Social Fundamentals</td>
<td>1</td>
</tr>
<tr>
<td>Speech: 2a</td>
<td>3</td>
</tr>
<tr>
<td>Zoology: 4, 8, 57</td>
<td>11</td>
</tr>
<tr>
<td>Total required units</td>
<td>92</td>
</tr>
<tr>
<td>Total elective units</td>
<td>33</td>
</tr>
<tr>
<td>Total for graduation</td>
<td>125</td>
</tr>
</tbody>
</table>

### Physical and Health Education for Women

All women majoring in physical and health education must build up their majors from the following sequence with the advice of their major professor. They must, however, meet all the requirements listed on pages 80 to 83, and in Summary III.

#### Freshman Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1a</td>
<td>3</td>
</tr>
<tr>
<td>Zoology 4</td>
<td>4</td>
</tr>
<tr>
<td>Social Fundamentals</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education 1a</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education 5a</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education 84</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

#### Sophomore Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Humanities</td>
<td>4</td>
</tr>
<tr>
<td>Psychology 1a</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education 2a</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education 6a</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education 82</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education 86a</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

#### Junior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education 131 (or 121 or 141)</td>
<td>3</td>
</tr>
<tr>
<td>Education 151</td>
<td>3</td>
</tr>
<tr>
<td>Zoology 57</td>
<td>4</td>
</tr>
<tr>
<td>Physical Education 110a</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education 163a</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education 134 (or 124)</td>
<td>3</td>
</tr>
<tr>
<td>Education 197r</td>
<td>2</td>
</tr>
<tr>
<td>Bacteriology 67</td>
<td>2</td>
</tr>
<tr>
<td>Physical Education 110b</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education 152</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education 163b</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>
### Senior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteriology 137</td>
<td>2</td>
<td>Education 199*</td>
<td>5</td>
</tr>
<tr>
<td>Education 197m</td>
<td>3</td>
<td>Political Science 100</td>
<td>3</td>
</tr>
<tr>
<td>Education 198*</td>
<td>5</td>
<td>Physical Education 114b</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education 114a</td>
<td>1</td>
<td>Physical Education 158</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education 153</td>
<td>3</td>
<td>Physical Education 155a</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td>1</td>
<td>Electives</td>
<td>2-3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td><strong>Total</strong></td>
<td>16-17</td>
</tr>
</tbody>
</table>

### Summary IV

For teachers of commercial subjects:

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. adm.: 6, 11, 13, 31a, 31b, 76a, 76b, 120a, 170a, 211</td>
<td>34</td>
</tr>
<tr>
<td>Economics: 1a, 1b, 148</td>
<td>9</td>
</tr>
<tr>
<td>Education: 131, 154, 151, 157, 197c, 197b, 199</td>
<td>23</td>
</tr>
<tr>
<td>English: 1a, 1b, 23</td>
<td>9</td>
</tr>
<tr>
<td>Introduction to Humanities</td>
<td>8</td>
</tr>
<tr>
<td>Military science and physical education (men); Social Fundamentals and physical education (women)</td>
<td>5</td>
</tr>
<tr>
<td>Political science: 100 (see Professional Studies, page 82)</td>
<td>3</td>
</tr>
<tr>
<td>Psychology 1a</td>
<td>3</td>
</tr>
<tr>
<td>Science: (see Summary I)</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total required units</strong></td>
<td>102</td>
</tr>
<tr>
<td><strong>Total elective units</strong></td>
<td>23</td>
</tr>
<tr>
<td><strong>Total for graduation</strong></td>
<td>125</td>
</tr>
</tbody>
</table>

### CURRICULUM FOR COMMERCIAL TEACHERS

#### Freshman Year

(Taken in School of Business and Public Administration)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1a (Comp.)</td>
<td>3</td>
<td>English 1b (Comp.)</td>
<td>3</td>
</tr>
<tr>
<td>Science (See Sum. I)</td>
<td>4</td>
<td>Science (See Sum. I)</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Adm. 6 (Intro. to Bus.)</td>
<td>3</td>
<td>Bus. Adm. 11 (Econ. Geography)</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Adm. 13* (Voc. Guidance)</td>
<td>1</td>
<td>Econ. 1b (Introduction)</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 1a (Intro)</td>
<td>3</td>
<td>Phys. Ed. (Men)</td>
<td>½</td>
</tr>
<tr>
<td>Phys. Ed. (Men)</td>
<td>½</td>
<td>Military (Men) or</td>
<td>1</td>
</tr>
<tr>
<td>Military (Men) or</td>
<td>1</td>
<td>Phys. Ed. (Women)</td>
<td>1</td>
</tr>
<tr>
<td>Phys. Ed. (Women)</td>
<td></td>
<td>Electives</td>
<td>1-2</td>
</tr>
<tr>
<td>Soc. Fund. (Women)</td>
<td>1</td>
<td><strong>Total</strong></td>
<td>15-16½</td>
</tr>
<tr>
<td>Electives</td>
<td>½-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15-17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Sophomore Year

(Taken in School of Business and Public Administration)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intro. to Humanities</td>
<td>4</td>
<td>Intro. to Humanities</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Adm. 76a (Office Tr'g)</td>
<td>4</td>
<td>Bus. Adm. 76b (Office Tr'g)</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Adm. 31a (Princ. of Acct'g)</td>
<td>3</td>
<td>Bus. Adm. 31b (Princ. of Acct'g)</td>
<td>3</td>
</tr>
<tr>
<td>Psych. 1a (Elementary)</td>
<td>3</td>
<td>English 23 (Business)</td>
<td>3</td>
</tr>
<tr>
<td>Military (Men) or</td>
<td>5</td>
<td>Military (Men) or</td>
<td>1</td>
</tr>
<tr>
<td>Military (Men) or</td>
<td></td>
<td>Phys. Ed. (Women)</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>0-2</td>
<td>Electives</td>
<td>0-2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15-17</td>
<td><strong>Total</strong></td>
<td>15-17</td>
</tr>
</tbody>
</table>

* May be taken either semester.
## Junior Year

(Taken in College of Education)

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>Units</td>
</tr>
<tr>
<td>Ed. 131 (The High School)</td>
<td>3</td>
</tr>
<tr>
<td>Ed. 151 (Ed. Psych.)</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 148 (Money &amp; Banking)</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>3-4</td>
</tr>
</tbody>
</table>

## Senior Year

(Taken in College of Education)

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>Units</td>
</tr>
<tr>
<td>Ed. 197c (Tch'g Bkkg. &amp; Bus.)</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Adm. 120a (Bus. Law)</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Adm. 211 (Seminar)</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td>8-9</td>
</tr>
<tr>
<td>Total</td>
<td>16-17</td>
</tr>
</tbody>
</table>

## TRADE AND INDUSTRIAL EDUCATION

Under a co-operative arrangement with the State Department of Vocational Education, the University in 1932 inaugurated a program of training for teachers of trades and industries and of mechanic arts. The curtailment of this type of work in the state makes it inadvisable to continue the program on as extensive a plan as was originally intended. Ample opportunity is offered for those who began the work in 1932 to complete their work for the degree in Summer Sessions.
College of Fine Arts and men's dormitories
COLLEGE OF FINE ARTS

The College of Fine Arts by four-year courses offered through the Department of Art, the Department of Dramatic Art, the School of Music, and the Department of Speech, offers several types of training—courses for those endowed with special ability, for those capable of becoming professionals through graduate study, for those who expect to teach the fine arts, and for those interested in art as part of a liberal education.

REQUIREMENTS FOR THE DEGREES OF BACHELOR OF FINE ARTS AND BACHELOR OF ARTS IN SPEECH

To meet the requirements for entrance to the College of Fine Arts the student must pass the general requirements as outlined on page 69.

For entrance to the School of Music the student, in addition to the general requirements, must pass an examination in the preparatory course in the chosen applied field (see page 90).

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Units Each Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1a, 1b (Freshman Composition)</td>
<td>3</td>
</tr>
<tr>
<td>Foreign language</td>
<td>4</td>
</tr>
<tr>
<td>From Group VI* (two departments)</td>
<td>4</td>
</tr>
<tr>
<td>Physical education and military science or Social Fundamentals</td>
<td>1-2</td>
</tr>
<tr>
<td>Total</td>
<td>15-16</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Units Each Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Humanities or English 29a-29b</td>
<td>3-4</td>
</tr>
<tr>
<td>Foreign language</td>
<td>4</td>
</tr>
<tr>
<td>From Group IV</td>
<td>3</td>
</tr>
<tr>
<td>From Group VI†</td>
<td>6</td>
</tr>
<tr>
<td>Physical education or military science</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>17-18</td>
</tr>
</tbody>
</table>

GROUP UNITS REQUIRED

All candidates for the degree of Bachelor of Fine Arts and Bachelor of Arts in Speech must take the courses prescribed and distribute them as follows:

<table>
<thead>
<tr>
<th>Group</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>12-14</td>
</tr>
<tr>
<td>II</td>
<td>16</td>
</tr>
<tr>
<td>III</td>
<td>5</td>
</tr>
<tr>
<td>IV</td>
<td>6-8</td>
</tr>
<tr>
<td>V</td>
<td>6</td>
</tr>
</tbody>
</table>

* Students majoring in speech will substitute for Group VI 5 units in speech and drama.
† Sophomores majoring in speech will take 3 units in speech and 3 units of electives each semester.
Candidates for the degrees of Bachelor of Fine Arts and Bachelor of Arts in Speech must present at least 40 units of upper-division work as part of the requirement for graduation.

The major or minor will lie wholly within the elective units, or will be included, in part, in the required units.

MAJORS AND MINORS

For a statement of majors and minors in the several departments of the College of Fine Arts, see the description of courses for the departments concerned.

SCHOOL OF MUSIC

Requirements for the Degree of Bachelor of Music in Piano, Voice, Band and Orchestral Instruments, Theory, and School Music

ADMISSION REQUIREMENTS IN THE APPLIED FIELD

Piano—Students wishing to enter the Freshman course in piano must be able to pass a satisfactory examination in the following preliminary courses (or their equivalent); scales; four octaves, majors and minors with all forms: Heller Fifty Selected Studies or Czerny Studies, Op. 299; Bach's Short Preludes and Fugues; and the easier sonatas of Haydn and Mozart.

Violin—Students wishing to major in violin must pass an examination in the following: scales and arpeggios in two octaves, the studies of Kayser, Book Three; Mazas, Vol. II; or others of similar grade. They must also have a thorough knowledge of the first five positions and be able to play such compositions as the concertos by Accolay, Seitz, and Ortmann. Entering students must have at least a working knowledge of the preparatory piano course. Any deficiencies in this respect must be made up.

Voice—The rating of students in voice depends upon (1) natural endowment and (2) previous preparation. It is based upon the development reached by graduates of high schools where singing (either class or solo) is intelligently taught. It is assumed that the entrant comes with a working knowledge of breath control, relaxation, resonance, and diction. Experience in sight-reading and piano accompaniment is essential.

School Music—Students wishing to enter the Freshman year of the school-music course must meet the same preliminary requirement in their major applied work as outlined above for piano, violin, and voice. Admission with major in other orchestral and band instruments is possible by arrangement with the Director of the School.

Band and Orchestral Instruments—Admission requirements for entrance to the course in band and orchestral instruments may be obtained by writing to the Director of the School.

* Students majoring in speech will substitute for Group VI 5 units in speech and drama.
† Students majoring in speech will substitute for this group 10 units selected from principles of speech, voice and diction, oral reading and interpretation, impersonative reading, dramatic production, and appreciation of drama.
Theory—The entrance requirements to the theory course are the same as those in piano. All entering students must pass a theory examination covering the construction of the major and minor scales, all intervals, and the different types of triads on any note of the chromatic scale.

Elective Credits for Entrance

Of the 4 high-school units in music acceptable for entrance to the School of Music, 1 or 2 units may be in theoretical subjects (appreciation and history, theory and harmony), 1 or 2 may be in piano or orchestral and band instruments, and 1 may be in chorus, glee club, band, or orchestra. Each unit in piano, voice, band and orchestral instruments in order to be accepted, must be accompanied by a unit in a theoretical music subject.

Only 1 unit may be presented in voice.

Classification of Students

The School of Music is open to all students in the University who seek instruction in music.

All students are registered in the School under one of the following classifications:

1. Students who are candidates for a degree: Those students who have fully met the academic requirements for entrance from high school and have also passed a satisfactory examination before a committee of the Music Faculty in the preliminary applied course are candidates for the degree.

2. Students classified as Freshmen Conditional: Students may enter the School of Music as Freshmen Conditional, provided they have met the regular academic requirements from an accredited high school, but have not passed the examination in the preliminary course in applied music. The student may carry the applied preliminary course along with the regular Freshman course with the exception of the major applied subject, and upon completing the preliminary course will be admitted as a candidate for a degree.

3. Special students in music: University students who do not wish to elect a curriculum leading to a degree in music may take such subjects as they desire with the consent of the instructor.

A candidate for a degree of Bachelor of Music must pass examinations at the close of the Junior and Senior years in the chosen major applied field. These examinations will be before a committee of the Music Faculty appointed by the Director.

A candidate for a degree coming from another accredited institution must complete a minimum of 30 units in residence, 8 of which will be in the applied major subject. This work must be in advance of the two-year applied preliminary course.

Candidates for a degree in an applied field are required to give a public recital in the Junior and Senior years.

Candidates for the degree in School Music are required to give a satisfactory performance in a public student recital before graduation.

COURSES OF STUDY

The Degree of Bachelor of Music

1. Courses in piano, voice, orchestral and band instruments leading to the degree of Bachelor of Music.

2. Course in theory leading to the degree of Bachelor of Music.

3. Course in school music leading to the degree of Bachelor of Music.
The Degree of Master of Music

The School of Music offers graduate courses in piano, voice, band and orchestral instruments, violin, theory and school music, leading to the degree of Master of Music. For a detailed outline of the requirements for this degree see Graduate Studies, page 131.

DEFINITION OF TERMS

1. Applied music is the practical study of piano, voice, and orchestral and band instruments in individual and class lessons.
2. Theory is a group name for harmony, composition, and allied subjects and is given in class.
3. Ensemble is the concerted performance of two or more performers in oratorio, glee clubs, orchestra, band, piano, and strings.

For a description of courses offered in the School of Music see page 200.

GENERAL REGULATIONS

Lessons missed by the student will not be made up unless he has notified the instructor twenty-four hours before the regular time of the lesson that he will not be able to take it.

In case of illness of two weeks or over, the loss will be refunded to the student provided a physician's certificate of disability be presented to the Dean.

Lessons missed by the instructor will be made up within the semester.

Lessons falling on a legal holiday will not be made up.

If a student wishes to discontinue a study of piano, voice, or violin, or any of the theoretical courses, he must notify the Registrar's office and obtain a drop card. In case of a student dropping one of these courses, no refund will be turned in for less than one half a semester's lessons.

Freshman students in the College of Fine Arts must adhere strictly to the course as outlined in the University catalogue unless exception is approved by the Dean of the College.

Music majors who are candidates for a Bachelor of Music degree are required to take one ensemble activity without credit each semester of the Junior and Senior years during residence as laboratory work in their applied field. They may, however, take an additional ensemble activity for credit, but only 4 units of such credit may be applied toward the Bachelor of Music degree. Ensemble activities include oratorio, glee club, band, orchestra, piano ensemble, and violin ensemble. Consult detailed course outlines, pages 93 to 101, as to which ensemble activities candidates for the various Bachelor of Music degrees may elect.

All major and minor applied subjects must be taken in individual lessons. Additional applied work may be taken in class lessons.

No student is allowed to use the pianos in the Music Hall unless tuition has been paid for their use. Pianos may be used only by those taking work in the School.

Pianos may be rented for a semester at the following rates:
- $ 4 for one hour's practice per day.
- $ 6 for two hours' practice per day.
- $ 8 for three hours' practice per day.
- $10 for four hours' practice per day.

Organs may be rented at a charge of $10 per semester.

Orchestral instruments may be rented for $2 per semester plus a deposit fee of $2 for the school year. When the instrument is returned in good condition, the deposit fee will be refunded to the renter. If the instrument is damaged in any way, a sufficient sum for repairs will be deducted.
from the deposit fee. Where the deposit fee does not cover the cost of repairs, the renter will be held responsible for the full amount of the coverage. This charge is for a period of seventeen weeks.

The rates of tuition for strictly individual lessons in voice, piano, orchestral or band instruments are:

**SEMESTER FEES FOR INDIVIDUAL LESSONS**

<table>
<thead>
<tr>
<th>Teacher's name</th>
<th>1 lesson per week</th>
<th>2 lessons per week</th>
<th>3 lessons per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piano—Rebell</td>
<td>$30</td>
<td>$45</td>
<td>$55</td>
</tr>
<tr>
<td>Piano—Altman</td>
<td>$30</td>
<td>$45</td>
<td>$55</td>
</tr>
<tr>
<td>Piano—Clampitt</td>
<td>$25</td>
<td>$45</td>
<td>$55</td>
</tr>
<tr>
<td>Organ—Switten</td>
<td>$25</td>
<td>$45</td>
<td>$55</td>
</tr>
<tr>
<td>Voice—Fease</td>
<td>$30</td>
<td>$45</td>
<td>$55</td>
</tr>
<tr>
<td>Voice—Colcaire</td>
<td>$25</td>
<td>$45</td>
<td>$55</td>
</tr>
<tr>
<td>Band and Orchestral Instruments—</td>
<td>$25</td>
<td>$45</td>
<td>$55</td>
</tr>
<tr>
<td>Anderson</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnson</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These lessons are not interchangeable and if one lesson per week is desired in any department other than that of the major subject, the price of that lesson will be on the basis of one lesson per week at the regular rate.

The above rates of tuition are for a period of seventeen weeks.

Registration Fee—Special students, permitted to register without credit in applied subjects, are required to pay a registration fee of $10 in addition to the above fees.

**GROUP UNITS REQUIRED**

All candidates for the degree of Bachelor of Music must take the courses prescribed and distribute them as follows:

**For the Degree of Bachelor of Music in Theory**

<table>
<thead>
<tr>
<th>Group</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I—English 1a-1b, 6 units and Intro. to Humanities or English 29a-29b</td>
<td>12-14</td>
</tr>
<tr>
<td>Group II—Foreign language (Italian, French, or German)</td>
<td>8</td>
</tr>
<tr>
<td>Group III—Physical education, military science, Social Fundamentals</td>
<td>5</td>
</tr>
<tr>
<td>Group IV—Astronomy, biology, botany, chemistry, geology, mathematics, physics, psychology, zoology (1 subject)</td>
<td>6-8</td>
</tr>
<tr>
<td>Group V—Social science</td>
<td>6</td>
</tr>
<tr>
<td>Group VI—Ear-Training and Sight-Singing (4), Survey of Musical Literature (4), conducting (1)</td>
<td>9</td>
</tr>
<tr>
<td>Group VII—Applied music</td>
<td>24</td>
</tr>
</tbody>
</table>

Total required | 70-74
Total electives | 55-51
Total for graduation | 125

The major will lie wholly within the elective units.

**Theory Major**

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harmony</td>
<td>8</td>
</tr>
<tr>
<td>Counterpoint</td>
<td>8</td>
</tr>
<tr>
<td>Form and Analysis</td>
<td>4</td>
</tr>
<tr>
<td>Composition I and II</td>
<td>8</td>
</tr>
<tr>
<td>Orchestration</td>
<td>4</td>
</tr>
</tbody>
</table>

Total | 32 units
For the Degree of Bachelor of Music in Piano, Voice, or Violin

<table>
<thead>
<tr>
<th>Group</th>
<th>Required Courses</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>English 1a-1b, and Intro. to Humanities or English 29a-29b</td>
<td>12-14</td>
</tr>
<tr>
<td>II</td>
<td>Foreign language (Italian, French, or German)</td>
<td>16</td>
</tr>
<tr>
<td>III</td>
<td>Physical education, military science, Social Fundamentals</td>
<td>5</td>
</tr>
<tr>
<td>IV</td>
<td>Astronomy, biology, botany, chemistry, geology, mathematics, physics, psychology, zoology (1 subject)</td>
<td>6-8</td>
</tr>
<tr>
<td>V</td>
<td>Social science</td>
<td>6</td>
</tr>
<tr>
<td>VI</td>
<td>Ear-Training and Sight-Singing (4), Survey of Musical literature (4), conducting (1)</td>
<td>9</td>
</tr>
<tr>
<td>VII</td>
<td>Harmony (8), Counterpoint (4), Form and Analysis (4), Composition (4)</td>
<td>20</td>
</tr>
</tbody>
</table>

Total required: 74-78
Total electives: 51-47
Total for graduation: 125

The elective major (applied music subject) will be wholly within the elective units.

**Major in Piano**

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 28a-b-c-d</td>
<td>16</td>
</tr>
<tr>
<td>Music 128a-b-c-d</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>32</td>
</tr>
</tbody>
</table>

**Major in Voice**

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 158a-b-c-d</td>
<td>16</td>
</tr>
<tr>
<td>Music 168a-b-c-d</td>
<td>16</td>
</tr>
<tr>
<td>Piano</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
</tr>
</tbody>
</table>

**Major in Violin**

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 16a-b-c-d</td>
<td>16</td>
</tr>
<tr>
<td>Music 116a-b-c-d</td>
<td>16</td>
</tr>
<tr>
<td>Piano</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
</tr>
</tbody>
</table>

For the Degree of Bachelor of Music in School Music

<table>
<thead>
<tr>
<th>Group</th>
<th>Required Courses</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>English 1a-1b, and Intro. to Humanities or English 29a-29b</td>
<td>12-14</td>
</tr>
<tr>
<td>II</td>
<td>Foreign language (Italian, French, German, or Spanish)</td>
<td>8</td>
</tr>
<tr>
<td>III</td>
<td>Physical education, military science, Social Fundamentals</td>
<td>5</td>
</tr>
<tr>
<td>IV</td>
<td>Astronomy, biology, botany, chemistry, geology, mathematics, physics, psychology, zoology (1 subject)</td>
<td>6-8</td>
</tr>
<tr>
<td>V</td>
<td>Social science</td>
<td>6</td>
</tr>
<tr>
<td>VI</td>
<td>Education 131, 134, 151, 197m, 199</td>
<td>15</td>
</tr>
<tr>
<td>VII</td>
<td>Applied music (24), Harmony (8), Ear-Training and Sight-Singing (4), conducting (2)</td>
<td>38</td>
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</table>

Total required: 94
Total electives: 31
Total for graduation: 125

The major (School Music and Theoretical Music) will lie wholly within the elective units.

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>School music (Music 77, 176, 177, 179)</td>
<td>7-10 units</td>
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<tr>
<td>Theoretical music (Music 102, 108, 110, 114)</td>
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<td>Total</td>
<td>23-26 units</td>
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For the Degree of Bachelor of Music in Band and Orchestral Instruments

<table>
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<tr>
<th>Group</th>
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<tbody>
<tr>
<td>I</td>
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<tr>
<td>II</td>
<td>16</td>
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<tr>
<td>III</td>
<td>5</td>
</tr>
<tr>
<td>IV</td>
<td>5</td>
</tr>
<tr>
<td>V</td>
<td>6-8</td>
</tr>
<tr>
<td>VI</td>
<td>6</td>
</tr>
<tr>
<td>VII</td>
<td>9</td>
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Total required: 82-86
Total electives: 43-39
Total for graduation: 125

The major (applied music—Band and Orchestral Instruments) will lie wholly within the elective units.

**DEGREE OF BACHELOR OF MUSIC IN THEORY**

**Freshman Year**

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<tr>
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<th>Subject</th>
<th>Units</th>
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<tbody>
<tr>
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<td>4</td>
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<tr>
<td>Music 3a (Harmony I)</td>
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<tr>
<td>Language (It., Fr., Ger.)</td>
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<td>English 1a (Fresh. Comp.)</td>
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<tr>
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<th>Subject</th>
<th>Units</th>
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<tbody>
<tr>
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<td>Music 4a (Harmony II)</td>
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<td>Language (It., Fr., Ger.)</td>
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<td>English 1b (Fresh. Comp.)</td>
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**Sophomore Year**

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<tr>
<td>Music 102a (Survey of Musical Literature)</td>
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<td>Music 6b (Keyboard Har.)</td>
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**Junior Year**

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<th>Subject</th>
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<td>Music 128a (Piano)</td>
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<td>Music 108a (Form and Anal.)</td>
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<td>Music 108b (Composition I)</td>
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</tr>
<tr>
<td>Music 114a (Orchestration I)</td>
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</thead>
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<td>Music 108b (Form and Anal.)</td>
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<td></td>
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<tr>
<td>Music 110b (Composition I)</td>
<td>2</td>
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<tr>
<td>Music 114b (Orchestration I)</td>
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**Senior Year**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Music 128c (Piano)</td>
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<td>Music 128d (Piano)</td>
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<tr>
<td>Music 111a (Composition II)</td>
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<td>Music 111b (Composition II)</td>
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<td>Music 112a (Counterpoint II)</td>
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<td>Music 112b (Counterpoint II)</td>
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Students desiring to teach may include in the total of available electives 15 units in education.

A recital of original composition must be given public performance during the second semester of the Senior year.

Students majoring in Theory are required to take (without credit) one of the following ensemble activities each-semester during Junior and Senior years: oratorio, glee club, orchestra, band, piano ensemble, or violin ensemble.

**DEGREE OF BACHELOR OF MUSIC IN VIOLIN**

**Freshman Year**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
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<tbody>
<tr>
<td>Music 16a (Violin)</td>
<td>4</td>
<td>Music 16b (Violin)</td>
<td>4</td>
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<tr>
<td>Music 3a (Harmony I)</td>
<td>2</td>
<td>Music 3b (Harmony I)</td>
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<tr>
<td>Language (It., Fr., Ger.)</td>
<td>4</td>
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<td>Eng. 1a (Composition)</td>
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<td>Eng. 1b (Composition)</td>
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<tr>
<td>Music 6a (E.T. and S.S. I)</td>
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**Sophomore Year**

<table>
<thead>
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<th>Subject</th>
<th>Units</th>
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<tbody>
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<td>Music 16c (Violin)</td>
<td>4</td>
<td>Music 16d (Violin)</td>
<td>4</td>
</tr>
<tr>
<td>Music 4a (Harmony II)</td>
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<td>Language (It., Fr., Ger.)</td>
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<td>Music 27c (Piano)</td>
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<td>Music 27b (Piano)</td>
<td>1</td>
</tr>
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<td>Music 102b (Survey of Musical Literature)</td>
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**Junior Year**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Music 116a (Violin)</td>
<td>4</td>
<td>Music 116b (Violin)</td>
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<tr>
<td>Music 108a (Form and Anal.)</td>
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<td>Music 108b (Form and Anal.)</td>
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<td>Music 111a (Composition)</td>
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<td>Music 111b (Composition)</td>
<td>2</td>
</tr>
<tr>
<td>Music 27c (Piano)</td>
<td>1</td>
<td>Music 27d (Piano)</td>
<td>1</td>
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<td>Introduction to Humanities or English</td>
<td>4-3</td>
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<tr>
<td>Music 109a (Counterpoint I)</td>
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## Senior Year

<table>
<thead>
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<tbody>
<tr>
<td>Music 116c (Violin)</td>
<td>4</td>
<td>Music 116d (Violin)</td>
<td>4</td>
</tr>
<tr>
<td>Music 112a Counterpoint II</td>
<td>2</td>
<td>Music 117 Conducting</td>
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<td>Music 114b Orchestration I</td>
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</table>

Students desiring to teach may include in the total available electives 15 units in education.

A recital is required in the second semesters of the Junior and Senior years.

Violin majors must take orchestra or violin ensemble (without credit) each semester of the Junior and Senior years as laboratory work in the applied field.

Students who on entering the School of Music can meet the piano requirement will be excused from further piano study.

## DEGREE OF BACHELOR OF MUSIC IN BAND AND ORCHESTRAL INSTRUMENTS

### Freshman Year

<table>
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<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
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<td>Applied music major (Inst.)</td>
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</tr>
<tr>
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<td>Multiple minor Instruments</td>
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</tr>
<tr>
<td>Music 3a Harmony I</td>
<td>2</td>
<td>Music 3b Harmony I</td>
<td>2</td>
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<tr>
<td>Language (It., Fr., Ger., Span.)</td>
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### Sophomore Year

<table>
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<tbody>
<tr>
<td>Applied music major (Inst.)</td>
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<td>Applied music major (Inst.)</td>
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<td>Multiple minor Instruments</td>
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<td>Music 4a Harmony II</td>
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### Junior Year

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<td>Applied music major (Inst.)</td>
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Senior Year

**First Semester**

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<td>Multiple minor (Instruments)</td>
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<tr>
<td>Music 115b (Band Arranging)</td>
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<td>Music 117 (Conducting)</td>
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**Second Semester**

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<td>Multiple minor (Instruments)</td>
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<tr>
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<tr>
<td>Music 115b (Band Arranging)</td>
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<td>Electives</td>
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</table>

Students desiring to teach may include in the total available electives 15 units in education.

One piano lesson a week for two years, or its equivalent in playing ability is required of all students majoring in this department.

Band or orchestral instrument majors must take band or orchestra (without credit) each semester of the Junior and Senior years; and all students registered for courses 18, 19, or 119 must take either woodwind or brass ensemble.

A public performance is required in the second semester of the Junior and Senior years.

**DEGREE OF BACHELOR OF MUSIC IN PIANO**

**Freshman Year**

**First Semester**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
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<tbody>
<tr>
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<td>4</td>
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<tr>
<td>Music 2a (Harmony I)</td>
<td>2</td>
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<tr>
<td>Music 7a (Keyboard Har. I)</td>
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</tr>
<tr>
<td>Language (It., Fr., Ger.)</td>
<td>4</td>
</tr>
<tr>
<td>English 1a (Composition)</td>
<td>3</td>
</tr>
<tr>
<td>Music 5a (E.T. and S.S. I)</td>
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**Second Semester**

<table>
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<th>Subject</th>
<th>Units</th>
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<tr>
<td>Music 3b (Harmony I)</td>
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<tr>
<td>Music 7b (Keyboard Har. I)</td>
<td>1</td>
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<tr>
<td>Language (It., Fr., Ger.)</td>
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<tr>
<td>English 1b (Composition)</td>
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<td>Music 5b (E.T. and S.S. I)</td>
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<tr>
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<td><strong>Total</strong></td>
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**Sophomore Year**

**First Semester**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
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<tbody>
<tr>
<td>Music 28c (Piano)</td>
<td>4</td>
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<tr>
<td>Music 4a (Harmony II)</td>
<td>2</td>
</tr>
<tr>
<td>Music 8a (Keyboard Har. II)</td>
<td>1</td>
</tr>
<tr>
<td>Language (It., Fr., Ger.)</td>
<td>4</td>
</tr>
<tr>
<td>Music 6a (E.T. and S.S. II)</td>
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</tr>
<tr>
<td>Music 102a (Survey of Musical Literature)</td>
<td>2</td>
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<td>Phys. Ed. 2a or Mil. 2a</td>
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<td>Electives</td>
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**Second Semester**

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<td>Music 8b (Keyboard Har. II)</td>
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</tr>
<tr>
<td>Language (It., Fr., Ger.)</td>
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<tr>
<td>Music 6b (E.T. and S.S. II)</td>
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<td>Music 102b (Survey of Musical Literature)</td>
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**Junior Year**

**First Semester**

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<tbody>
<tr>
<td>Music 123a (Piano)</td>
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<td>Music 108a (Form and Anal.)</td>
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<tr>
<td>Music 110a (Composition)</td>
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<tr>
<td>Introduction to Humanities or English 298</td>
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**Second Semester**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Music 128b (Piano)</td>
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<tr>
<td>Music 108b (Form and Anal.)</td>
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</tr>
<tr>
<td>Music 110b (Composition)</td>
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</tr>
<tr>
<td>Introduction to Humanities or English 298</td>
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<td><strong>Total</strong></td>
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### Senior Year

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</thead>
<tbody>
<tr>
<td>Music 128c (Piano)</td>
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<td>Music 128d (Piano)</td>
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<tr>
<td>Music 159 or 117 (Conducting)</td>
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<td>Music 109a (Counterpoint I)</td>
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</table>

Students desiring to teach may include in the total available electives 15 units in education.

A recital is required in the second semesters of the Junior and Senior years.

Piano majors must take piano ensemble (without credit) each semester of the Junior and Senior years as laboratory work in the applied field. Upon recommendation of the major professor one of the following ensemble activities may be substituted for piano ensemble: oratorio, glee club, orchestra, band, or violin ensemble.

### Degree of Bachelor of Music in Voice

#### Freshman Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Music 58a (Voice)</td>
<td>4</td>
<td>Music 58b (Voice)</td>
<td>4</td>
</tr>
<tr>
<td>Music 3a (Harmony I)</td>
<td>2</td>
<td>Music 3b (Harmony I)</td>
<td>2</td>
</tr>
<tr>
<td>Language (It., Fr., Ger.)</td>
<td>4</td>
<td>Language (It., Fr., Ger.)</td>
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</tr>
<tr>
<td>English 1a (Composition)</td>
<td>3</td>
<td>English 1b (Composition)</td>
<td>3</td>
</tr>
<tr>
<td>Music 5a (E.T. and S.S. I)</td>
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<td>Music 5b (E.T. and S.S. I)</td>
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<tr>
<td><strong>Total</strong></td>
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#### Sophomore Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 58c (Voice)</td>
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<td>Music 58d (Voice)</td>
<td>4</td>
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<tr>
<td>Music 4a (Harmony II)</td>
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<td>Music 4b (Harmony II)</td>
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<td>Language (It., Fr., Ger.)</td>
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<tr>
<td>Music 6a (E.T. and S.S. II)</td>
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<td>Music 6b (E.T. and S.S. II)</td>
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<tr>
<td>Music 102a (Survey of Musical Literature)</td>
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<td>Music 102b (Survey of Musical Literature)</td>
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<tr>
<td>Music 27a (Piano)</td>
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#### Junior Year

<table>
<thead>
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<th>Subject</th>
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<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Music 158a (Voice)</td>
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<td>Music 158b (Voice)</td>
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<td>Music 108a (Form and Anal.)</td>
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<td>Music 108b (Form and Anal.)</td>
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<td>Music 110a (Composition)</td>
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<td>Music 27c (Piano)</td>
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<td>Introduction to Humanities or English</td>
<td>4-3</td>
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Senior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>First Semester</th>
<th>Units</th>
<th>Subject</th>
<th>Second Semester</th>
<th>Units</th>
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<tbody>
<tr>
<td>Music 158c (Voice)</td>
<td>4</td>
<td>Music 158d (Voice)</td>
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<td>Music 27f (Piano)</td>
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<td>Music 27 (Piano)</td>
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<td>Music 114a (Orch. I)</td>
<td>2</td>
<td>Music 114b (Orch. I)</td>
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<td><strong>Total</strong></td>
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<td><strong>Total</strong></td>
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Students desiring to teach may include in the total available electives 15 units in education.

A recital is required in the second semesters of the Junior and Senior years.

Voice majors must take oratorio or glee club (without credit) each semester during residence in the Junior and Senior years as laboratory work in the applied field.

**DEGREE OF BACHELOR OF MUSIC IN SCHOOL MUSIC**

**Freshman Year**

<table>
<thead>
<tr>
<th>Subject</th>
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<th>Units</th>
<th>Subject</th>
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<th>Units</th>
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<td>Music (applied major)</td>
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<tr>
<td>Music (applied minor)</td>
<td>1</td>
<td>Music (applied minor)</td>
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</tr>
<tr>
<td>Music 4a (Harmony II)</td>
<td>2</td>
<td>Music 4b (Harmony II)</td>
<td>2</td>
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<td></td>
</tr>
<tr>
<td>Music 6a (E.T. and S.S. I)</td>
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<td>Music 6a (E.T. and S.S. II)</td>
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</tr>
<tr>
<td>Music 77 (S.M. Ensemble)</td>
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<td></td>
</tr>
<tr>
<td>Language (It., Fr., Span., Ger.)</td>
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<td>Language (It., Fr., Ger., Span.)</td>
<td>4</td>
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<td></td>
</tr>
<tr>
<td>English 1a (Composition)</td>
<td>3</td>
<td>English 1b (Composition)</td>
<td>3</td>
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<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td><strong>Total</strong></td>
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**Sophomore Year**

<table>
<thead>
<tr>
<th>Subject</th>
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<th>Units</th>
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<tr>
<td>Music (applied major)</td>
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<td>Music (applied major)</td>
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<td></td>
</tr>
<tr>
<td>Music (applied minor)</td>
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<td>Music (applied minor)</td>
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<tr>
<td>Music 4a (Harmony II)</td>
<td>2</td>
<td>Music 4b (Harmony II)</td>
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<td></td>
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<tr>
<td>Music 6a (E.T. and S.S. I)</td>
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<td>Music 6a (E.T. and S.S. II)</td>
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</tr>
<tr>
<td>Music 77 (S.M. Ensemble)</td>
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**Junior Year**

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<tr>
<td>Music 102a (Survey)</td>
<td>2</td>
<td>Music 102b (Survey)</td>
<td>2</td>
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<tr>
<td>Music 108a (Form and Anal.)</td>
<td>2</td>
<td>Music 108b (Form and Anal.)</td>
<td>2</td>
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<tr>
<td>Music 114a (Orchestration)</td>
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<td>Music 114b (Orchestration)</td>
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<td>Music 177 (School Music)</td>
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<td>Music 21, 23, or 24</td>
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<td>Education 134</td>
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### Senior Year

<table>
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<th>Subject</th>
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<tr>
<td>Music (applied major)</td>
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<td>Music (applied major)</td>
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<tr>
<td>Music 110a (Composition)</td>
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<td>Music 110b (Composition)</td>
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<td>Music 117 (Conducting)</td>
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<td>Music 159 (Conducting)</td>
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<td>Music 21, 23, or 24</td>
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<td>Education 197m</td>
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<td>Electives</td>
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<td>Electives</td>
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</table>

Twenty-four units of applied music (see page 94, "For the Degree of Bachelor of Music") are required for graduation. The distribution of these units must be approved by the professor of school music. Each school-music major will select an applied field in which he will earn from 12 to 16 units, the other units to be distributed among the other applied fields (piano, voice, strings, wood winds, brass, percussion). Credit in Music 26d (Piano), or equivalent, is required of all school-music majors.

School-music majors must take oratorio, glee club, orchestra, band, or ensemble (without credit) each semester during Junior and Senior years as laboratory work in the applied field.

Candidates for the degree in school music are required to give a satisfactory performance in a public student recital before graduation.

School-music majors are urged to elect Political Science 100 (3 units) in partial fulfillment of social science requirement (see page 100, "For Degree of Bachelor of Music in School Music").

School-music majors also should study carefully the requirements for Teacher's Certificates on page 80, especially the requirements for Secondary and Special Certificates.

No credit in Music 14, 17, 26, or 56 may be applied toward fulfillment of the applied major requirement (12-16 units) in school music.

Registration and credit in Music 77 is required every spring semester during residence only.

The student will include in his elective units: (1) the additional applied work not specified in the preceding four-year outline, (2) the science requirement, and (3) the social science requirement (see page 100, "For the Degree of Bachelor of Music in School Music").

### SCHOOL OF MUSIC ACTIVITIES

**The University Glee Clubs**

The Men's Glee Club and the Women's Glee Club give frequent concerts at home and throughout the state. The material covered in rehearsal and performance includes part songs, glees and madrigals, sacred literature, and opera performance. One credit per semester is earned, but not over 4 units may be counted toward graduation.

**Student Recitals**

These recitals are held twice a month. They are open to all music students, parents, and faculty members. Only students who do satisfactory work are permitted to appear in these recitals. They are under the personal direction of the heads of the various departments.

**Public Concerts**

These concerts are given by the Faculty, advanced students, orchestra, trio, and visiting artists. They are open to the public.
University Series

In order that students may not only be provided with ample facilities for study under competent instructors, but may have the opportunity of hearing the best in music, drama, and lectures, the University sponsors the University Series. Upon the completion of registration all students who are registered for 6 or more units in the University are presented with a season ticket to the course.

COLLEGE OF FINE ARTS ACTIVITIES

School of Music Recognition

The School of Music is accredited with all the national accrediting organizations. This school is a member of the National Association of Schools of Music and is accredited by that organization. The requirements for entrance and for graduation as set forth in this catalogue are in accordance with the published regulations of the National Association of Schools of Music.

Fraternities

The year 1927 witnessed the installation at the University of Arizona of the Alpha Upsilon Chapter of Phi Mu Alpha, national music fraternity. In the early fall of 1927 the Alpha Beta Chapter of Sigma Alpha Iota, national women's music fraternity, was installed. During the second semester of 1928-29, a local chapter of Kappa Kappa Psi, national honorary band fraternity, was installed.

The national dramatic fraternities, Theta Alpha Phi and the National Collegiate Players, also have local chapters on the campus. These chapters take an active part in the fine arts activities on the campus and in the College.

A local chapter of the National Honorary Forensic Fraternity, Delta Sigma Rho, is located on the campus.

Art Exhibits

A permanent exhibit of the work of students, faculty, or professional artists will be open to the public at all times in the art exhibition room of the University Library. All art majors will be required to attend the professional exhibits.

The Theatre

Students in dramatic art and the dramatic fraternities present plays at the University Theatre during the year. Participation in plays is open to all University students.

The University Concert Band

The concert band is under the direction of the instructor in band and orchestral instruments. The School of Music owns a complete set of first-class instruments for the use of this band. A credit of 1 unit is given per semester for this course.

University Military Band

The military band is under the supervision of the Department of Military Science and Tactics. It furnishes music for all military ceremonies and assembles. A set of instruments is provided by the War Department. A credit of 1 unit is given per semester; this course may be taken in place of military training during the Freshman and Sophomore years.
The University Orchestra

The University Orchestra is composed of selected students from the University and is trained under the direction of the instructor of violin. A credit of 1 unit per semester is given.

Fine Arts Festival

Each spring the College of Fine Arts sponsors a series of concerts exhibits, speech conferences, programs, and plays by world artists, Faculty, advanced students, and organizations of the University and of the city.

Fine Arts Lectures

Tucson and the University are particularly fortunate because of the fine climatic conditions existing in the vicinity in having many artists of national reputation spend their winters here. Many of these give frequent lectures on the campus and in the city.

Forensic Activities

Intramural and intercollegiate contests and tournaments in debating, oratory, extemporaneous speaking, interpretative reading, and after-dinner speaking are open to undergraduate men and women students.
Reading room of the Law Library
COLLEGE OF LAW

The University of Arizona College of Law is a member of the Association of American Law Schools and is rated by the American Bar Association as an accredited institution on the basis of the following pronouncement:

"The American Bar Association is of the opinion that every candidate for admission to the bar should give evidence of graduation from a law school complying with the following standards:

"It shall require as a condition of admission at least two years of study in a college.

"It shall require its students to pursue a course of three years' duration if they devote substantially all of their working time to their studies, and a longer course, equivalent in the number of working hours, if they devote only part of their working time to their studies.

"It shall provide an adequate library available for the use of the students.

"It shall have among its teachers a sufficient number giving their entire time to the school to insure personal acquaintance and influence with the whole student body."

Graduates of the University of Arizona with the law degree are therefore accredited in New York, New Mexico, and other states requiring of legal educational institutions such membership and rating for accredited standing.

ADMISSION

Students applying for admission to the College of Law must be at least twenty years of age, and, if candidates for a law degree, must present to the registering officer of the college a certificate of the University Registrar certifying that the applicant has completed all prelegal requisites pertaining to such degree. Courses of law taken by students before the prelegal requirements for the desired law degree have been fully met will not be credited as part of the law courses applicable toward the degree.

Students commencing the study of law will be admitted to the College of Law only at the beginning of the fall semester. Students who have completed satisfactorily one full semester or more of law study in the University of Arizona or in some other approved law school may enter at the beginning of either semester.

Law College Fee—All students registering in the College of Law for 6 units or more of work are required to pay a fee of $25 each semester in addition to other fees (see page 54). All students registering in the College of Law for 5 units or less of work are required to pay a fee of $4 per unit each semester in addition to other fees. Any student in any other college of the University taking 6 or more units of law is subject to a fee of $25 each semester in addition to other fees.

CANDIDATES FOR DEGREES

Students desiring to enter the College of Law as candidates for a law degree must have complied with the general requirements for admission to the College of Liberal Arts of the University of Arizona, and in addition thereto:

Bachelor of Laws

Candidates for the degree of Bachelor of Laws by work in residence must have secured in some college of the University of Arizona other
than the College of Law, or in some other college or university approved by standard regional accrediting agencies, 60 units of credit for college work, of which not less than 50 units must have been carried with a grade of 3 or better, which said 60 units shall be exclusive of credit earned in nontheory courses in military science, hygiene, domestic arts, physical education, vocal or instrumental music, shop work, or other courses without intellectual content of substantial value, and, subject to the limitation of units established by the University of Arizona in its College of Liberal Arts (see pages 112, 113), shall be applicable toward the academic degree of Bachelor of Arts or Bachelor of Science.

Juris Doctor

Candidates for the degree of Juris Doctor must have secured from the University of Arizona, or from some other accredited college or university, prior to the commencement of their study of law, the degree of Bachelor of Arts or Bachelor of Science or another equivalent academic degree.

It is suggested that students pursuing prelegal courses of study whether candidates for the degree of Bachelor of Laws, or for the degree of Juris Doctor, in selecting their elective courses of study choose courses open to them in economics, sociology, political science, English, speech, history, philosophy, and psychology.

SPECIAL STUDENTS

A limited number of students with less than the academic credits required of candidates for a law degree may be admitted as special students. An applicant for admission as a special student must be at least twenty-three years of age, and his experience and educational training must have been such as, in the judgment of the Law Faculty, to have specially equipped him for the successful study of law. The number of special students admitted to the College of Law each year is limited to 10 per cent of the average number of students admitted by the College of Law as beginning regular students during the two preceding academic years. Application for admission as such special student must be made to the Dean of the College of Law well in advance of the beginning of the regular academic year. Such applications will be considered and acted upon at the first meeting of the Law Faculty after September 1 of each year. Special students are not candidates for a law degree.

ADMISSION TO ADVANCED STANDING

Credit for courses of law study pursued in another college or school of law not a member of the Association of American Law Schools by a student transferring to the University of Arizona will not be accepted by the University of Arizona as applicable toward the law degree.

A student transferring from another accredited school or college of law will be given credit for the courses of law study therein pursued only upon presentation of an official certificate showing the satisfactory completion of:

1. The prelegal course of study required for admission to its College of Law by the University of Arizona of a student who is a candidate for the law degree sought by such transferring student.

2. The courses of law study for which credit is requested.
# COURSES OF STUDY LEADING TO THE DEGREES OF BACHELOR OF LAWS AND JURIS DOCTOR

## First Year—Required

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law 2a (Contracts)</td>
<td>3</td>
</tr>
<tr>
<td>Law 8 (Personal Property)</td>
<td>2</td>
</tr>
<tr>
<td>Law 8 (Criminal Law)</td>
<td>3</td>
</tr>
<tr>
<td>Law 8a (Pleading and Procedure)</td>
<td>2</td>
</tr>
<tr>
<td>Law 41a (Torts)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law 2b (Contracts)</td>
<td>3</td>
</tr>
<tr>
<td>Law 8a (Pleading and Procedure)</td>
<td>2</td>
</tr>
<tr>
<td>Law 41b (Torts)</td>
<td>3</td>
</tr>
<tr>
<td>Law 101 (Legal Bibliography)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

## Second Year—Required

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law 110a (Equity)</td>
<td>3</td>
</tr>
<tr>
<td>Law 118a (Evidence)</td>
<td>3</td>
</tr>
<tr>
<td>Law 139 (Titles)</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law 110b (Equity)</td>
<td>3</td>
</tr>
<tr>
<td>Law 118b (Evidence)</td>
<td>3</td>
</tr>
<tr>
<td>Law 140 (Wills Administration)</td>
<td>3</td>
</tr>
</tbody>
</table>

## Third Year—Required

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law 143a (Constitutional Law)</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law 143b (Constitutional Law)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Elective Courses for Second- and Third-Year Students

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law 103 (Practice)</td>
<td>2</td>
</tr>
<tr>
<td>Law 107* (Domestic Relations)</td>
<td>2</td>
</tr>
<tr>
<td>Law 121† (Sales)</td>
<td>3</td>
</tr>
<tr>
<td>Law 125* (Partnership)</td>
<td>2</td>
</tr>
<tr>
<td>Law 127† (Credit Transactions)</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law 136 (Trusts)</td>
<td>3</td>
</tr>
<tr>
<td>Law 129* (Water Rights)</td>
<td>2</td>
</tr>
<tr>
<td>Law 124† (Public Utilities)</td>
<td>3</td>
</tr>
<tr>
<td>Law 136* (Mining Law)</td>
<td>2</td>
</tr>
<tr>
<td>Law 125† (Bills and Notes)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Additional Third-Year Elective Courses

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law 147 (Private Corporations)</td>
<td>3</td>
</tr>
<tr>
<td>Law 149 (Future Interests)</td>
<td>3</td>
</tr>
<tr>
<td>Law 150 (Creditors' Rights)</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law 145$ (Practice Court)</td>
<td>3</td>
</tr>
<tr>
<td>Law 109 (Legal Ethics)</td>
<td>2</td>
</tr>
</tbody>
</table>

## Maximum Units—Students in the College of Law may not register for more than 15 units of work.

Casebooks may be changed by the Faculty of the College of Law at any time prior to the semester in which the particular casebook is to be used.

Students finding it necessary to engage in gainful occupations for self-support while pursuing their law course must decrease proportionately their load of law study.

## REQUIREMENTS FOR THE LAW DEGREE

To secure a degree in law from the University of Arizona, a candidate for such degree must:

1. Have met fully all prelegal requirements established by the Univer-

* Offered in 1938-39 and alternate years.
† Offered in 1937-38 and alternate years.
$ Prerequisites: Law 9a-9b, 101, 103, 118a-118b.
University of Arizona for the admission to its College of Law of students as candidates for a law degree (see page 105).

2. Have spent at least three full academic years in resident study of law in accredited institutions. When part of such study has been done in other and accredited law schools, the work of the third or Senior year, comprising not less than 24 units of law credits (see "Residence," page 70), must be done in residence in this University.

3. Have secured by and during such three or more years of resident study not less than 78 units of credit of satisfactory grade in courses of law study (see "Quality of Work," page 70), in which must be included the courses of law study above designated as "Required."

4. In order that a student's final (sixth) semester of regular resident work may be accepted as a part of the required "three full academic years of resident study of law," such student must register for and successfully complete during such semester not less than 6 units of law study, although a less number of units would enable such student to meet the quantitative requirement (78 units) for the law degree.

Degree of Bachelor of Laws

This degree will be conferred by the University of Arizona upon students who, having registered as candidates for such degree, have successfully met the above requirements, and upon students who, having registered for the degree of Juris Doctor, have not attained in their law courses the standard of excellence required for the Juris Doctor degree, but have met the requirements for the degree of Bachelor of Laws.

Degree of Juris Doctor

This degree will be conferred by the University of Arizona upon those students regularly matriculated in its College of Law as candidates for such degree:

Who, having been granted the degree of Bachelor of Arts or Bachelor of Science, or other equivalent academic degree by this University or by an accredited institution, have thereafter satisfactorily completed approved courses of law study and obtained therefor in the College of Law credits totaling not less than 78 units; and who (1) have secured a grade of 2 or better in not less than 75 per cent of the last 24 units of law study, which 24 units must be taken in the University of Arizona; and (2) have throughout their entire law course demonstrated an excellence of scholarship meriting in the judgment of the Law Faculty the award of such degree.

Combined Course of Study for Students Desiring the Academic Degree and the Bachelor of Laws Degree

For students matriculating in the University of Arizona, the University offers in its colleges of Liberal Arts and of Law a combined course whereby its students may secure the academic bachelor's degree and the degree of Bachelor of Laws in the period of six years. Students desiring to take advantage of this combined course should register in the College of Liberal Arts for four years and in the College of Law for two years. The work of the Senior year under the registration in the College of Liberal Arts is done, however, under the supervision of the Law Faculty.
Students registering for this combined course will be awarded the academic bachelor's degree under the following conditions:

They must be regularly matriculated in the University, and before registering in the College of Law as a candidate for the law degree, must have successfully completed all the work required in the College of Liberal Arts for graduation with a bachelor's degree, except a possible maximum of 28 units of electives. This academic course must include:

1. A major in the College of Liberal Arts, except in the School of Business and Public Administration, selected by the student and approved by the major professor and Dean of that college. For this combined course in the School of Business and Public Administration, see page 121.

2. All other subject and group requirements established in the College of Liberal Arts (see “Group Units Required,” page 111).

3. Not to exceed 28 units of law in courses to be determined by the Law Faculty.

4. Academic electives to meet the 125 units required for graduation from the College of Liberal Arts.

5. Students transferring from other institutions may not register for the work in law under this combined course without first meeting the residence requirements of 30 units of prelegal credits in the College of Liberal Arts of the University of Arizona.

Upon receipt of the academic bachelor's degree in this combined course, the student will be admitted into the College of Law as a candidate for the degree of Bachelor of Laws under the conditions above set forth.
COLLEGE OF LIBERAL ARTS

REQUIREMENTS FOR THE DEGREES OF BACHELOR OF ARTS AND BACHELOR OF SCIENCE

The four-year curriculum of the Liberal Arts College is designed for students who seek culture and scholarship as part of intelligent living and as a foundation for later, more intensive specialization. The first two years are designated the lower division and the last two years the upper division of the college. In the lower division the subject matter and the methods of instruction are planned so as to round out the student’s understanding of a wide range of interests and to insure reasonable facility in the use of basic tools of thought and communication. The aim in the upper division is increased mastery in a limited field, the field of the student’s technical or professional interests. To secure this concentration the major and minor requirements for the degrees have been formulated.

A student who has 56 units of credit is a Junior or upper-division student.

No regular student shall be permitted to register for an upper-division course until he has attained Junior standing.

LOWER-DIVISION SCHEDULE

<table>
<thead>
<tr>
<th></th>
<th>Freshman Year</th>
<th></th>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 units each semester</td>
<td>4 units each semester</td>
<td></td>
</tr>
<tr>
<td>English la-1b (Freshman Composition)</td>
<td></td>
<td></td>
<td>Introduction to Humanities†</td>
</tr>
<tr>
<td>Foreign language*</td>
<td></td>
<td></td>
<td>Foreign language*</td>
</tr>
<tr>
<td>From Group IV† (social sciences)</td>
<td>3 units each semester</td>
<td>Group IV if not taken in Freshman year plus major of minor or free electives</td>
<td>6-8 units each semester</td>
</tr>
<tr>
<td>From Group VI (science or mathematics)</td>
<td>4 units each semester</td>
<td>Physical education or military science</td>
<td>1 unit each semester</td>
</tr>
<tr>
<td>Physical education, and military science or Social Fundamentals</td>
<td>1-2 units each semester</td>
<td></td>
<td>15-17 units each semester</td>
</tr>
<tr>
<td></td>
<td>15-16 units each semester</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

GROUP UNITS REQUIRED

Candidates for the degree of Bachelor of Arts or Bachelor of Science must meet group requirements as listed on the following page.

* Two-year prelegal students not candidates for an academic degree may substitute an additional year course in the social sciences for the Sophomore language requirement, provided they continue their high-school language in their Freshman year. A reading knowledge of French and German is usually required for advanced degrees.

† Freshmen planning to major in science should postpone Group IV and take two courses in Group VI. Others may defer the Group IV requirements until the Sophomore year and in its place elect any courses open to Freshmen in any department of the University.

‡ Sophomore premedical students may defer this group requirement and substitute a required premedical subject.
For the Degree of Bachelor of Arts

<table>
<thead>
<tr>
<th>Group</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>I - English 1a &amp; 1b</td>
<td>6</td>
</tr>
<tr>
<td>II - Introduction to Humanities</td>
<td>8</td>
</tr>
<tr>
<td>III - Foreign language (one)</td>
<td>16</td>
</tr>
<tr>
<td>IV - Anthropology, economics, history, philosophy, political science, psychology, social science survey, sociology, one subject</td>
<td>6</td>
</tr>
<tr>
<td>V - For men, military science, 4 units; physical education, 1 unit; for women, physical education, 4 units; Social Fundamentals, 1 unit</td>
<td>5</td>
</tr>
<tr>
<td>VI - Astronomy, biology, botany, chemistry, geology, mathematics, physical sciences, physics, zoology, one subject</td>
<td>8</td>
</tr>
</tbody>
</table>

Total group units required: 49
Total elective units: 76
Total for graduation: 125

The major or minor may lie wholly within the 76 elective, or be included, in part, in the 49 required units.

For the Degree of Bachelor of Science

<table>
<thead>
<tr>
<th>Group</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>I - English 1a &amp; 1b</td>
<td>6</td>
</tr>
<tr>
<td>II - Introduction to Humanities</td>
<td>8</td>
</tr>
<tr>
<td>III - French, German, Spanish, one subject</td>
<td>16</td>
</tr>
<tr>
<td>IV - Anthropology, economics, history, philosophy, political science, psychology, social science survey, sociology, one subject</td>
<td>6</td>
</tr>
<tr>
<td>V - For men, military science, 4 units; physical education, 1 unit; for women, physical education, 4 units; Social Fundamentals, 1 unit</td>
<td>5</td>
</tr>
<tr>
<td>VI - Astronomy, biology, botany, chemistry, geology, mathematics, physical sciences, physics, zoology, 24 units, including 8 in mathematics and 16 units in not more than two other subjects</td>
<td>24</td>
</tr>
</tbody>
</table>

Total group units required: 65
Total elective units: 60
Total for graduation: 125

The major or minor may lie wholly within the 60 elective or be included, in part, in the 65 required units.

Exception to English and Language Requirements

Freshmen unusually proficient in English composition may, upon examination, be exempted from English 1a.

Students who have had four years of one high-school language, or the equivalent as shown by examination, and who pass successfully a one-year course of upper-division literature in the same language, are exempt from further language requirements. This applies to both the Bachelor of Arts and the Bachelor of Science degrees.

Limitation of Units for B.A. or B.S. Degree

Candidates for the degree of Bachelor of Arts or Bachelor of Science may not present more than the number of units specified in the several classes of subjects enumerated:

- In any department included in the list of possible majors in this college: 48 units.
- In lower-division courses: 85 units.
- In the following professional or vocational departments a total of 12 units: Agriculture and Home Economics Education; Agricultural Chemistry; Agricultural Engineering; Agronomy; Animal Husbandry; Civil Engineering; Dairy Husbandry; Business Administration; Electrical Engineering; Entomology; Horticulture; Mechanic Arts; Mechanical
Engineering; Mining Engineering and Metallurgy; in music: Band and Orchestral Instruments, Piano, School Music, Violin, Voice; Poultry Husbandry. Courses starred in any of these departments are not subject to this limitation; they are considered nonprofessional.

In education: 6 units, except for candidates for special certificate in business. 12 units.
In military: 12 units above Military 2b.
In home economics: 20 units.
In law: 28 units in the Senior year for candidates for combined six-year course leading to the degrees of B.A. and LL.B., B.S. and LL.B., or B.S. in Bus. Admin. and LL.B. (see page 108). Twelve units for all candidates who did not complete 97 units of academic credit before they registered for courses in law.
In physical education: 8 units above Phys. Ed. 2b for women, above Phys. Ed. 27 for men.

When students elect fractions of the total allowed in each of several of the above classifications, these fractions may total not more than one.

**MAJORS AND MINORS**

A major is defined as a minimum of 24 units in a student's field of intensive study.

A supporting minor is defined as 20 units in a group of subjects selected to supplement the major.

Not later than the beginning of the Junior year each student shall indicate on his registration card his choice of a subject for a major, and of a subject or subjects for a supporting minor. The major shall consist of not less than 24 units in one of the departments listed. Not more than 48 units may be taken in any one department. At least 16 units shall be in upper-division work. Certain departments exclude from the major the basic first-year course. These departments indicate this in their statement of requirements for the major. The supporting minor shall consist of not less than 20 units, chosen from related departments, at least 10 of which shall be in one department. The major and the minor must be selected in conference with the head of the department in which the major is chosen.

The work on the major subject must be distributed through at least four semesters. A student may not change his major except by filing with the Registrar at the beginning of a semester a petition approved by the two major professors concerned and the Dean of the college. (For information regarding the teaching minor see page 79.)

These requirements for major and minor do not apply to candidates for the degree of Bachelor of Science in Business Administration.

All schedules of courses must be approved by the Dean of the college, after having been approved by the major professor.

The following is a list of majors and recommended minors in this college:

- Anthropology
- Art
- Astronomy
- Bacteriology
- Botany
- Chemistry
- Mathematics
- Physics
- Biology
- Geology
- Agriculture
- Metallurgy
- Food courses in home economics.
Classical literature......English, French, German, Spanish, philosophy, history.
Economics....................Anthropology, biology, English, history, philosophy, political science, psychology, sociology, mathematics.
English........................History, Latin, French, German, philosophy, psychology, dramatic art, Spanish, speech.
German.........................Classical literature, English, French, history, philosophy, Spanish.
French.........................Classical literature, English, German, history, philosophy, Spanish.
Geology.........................Chemistry, physics, metallurgy, mineralogy.
History.........................Economics, political science, foreign languages, English, philosophy.
Political science................Economics, history, modern or ancient languages.
Mathematics...................Astronomy, physics, chemistry, geology, philosophy, biology, economics.
Music..........................Philosophy, history, English, modern languages, psychology, dramatic art, speech.
Philosophy ....................History, literature, mathematics, psychology, sociology, economics, languages, English, art.
Psychology ....................Biology, mathematics, philosophy, physics.
Physics........................Chemistry, mathematics, astronomy, philosophy, geology, biology, engineering.
Spanish.........................Classical literature, English, French, German, history, philosophy.
Sociology .....................Anthropology, biology, economics, philosophy, political science, psychology.
Zoology .......................Botany, chemistry, geology, mathematics, physics, psychology, bacteriology.

DEPARTMENTAL HONORS AND COMPREHENSIVE EXAMINATIONS

The colleges of Liberal Arts and Education offer Seniors an opportunity to enroll as candidates for Departmental Honors. The aim is to encourage and provide opportunity for a more comprehensive type of scholarship on the part of really capable and ambitious students.

Seniors who are candidates for Departmental Honors enroll for “English Honors,” “History Honors,” etc. and are allowed 4 units of credit in their Senior year. During their Junior year they should confer with the head of their major department about the nature and the point of view of this work.

In general, this form of study involves student initiative, a comprehensive point of view, and the capacity to interrelate materials in closely related fields. It usually includes among other things a survey of the history and literature of the subject, a view of important materials omitted in the students' election of major courses, and a review of the basic facts and principles. The departments decide upon the details of their respective courses. The work is left largely to the initiative of the students, who meet frequently either individually or in small groups with a faculty member for advice and guidance.

Registration is open to all students who can present a reasonable one-year schedule leading to the completion of a major in the department concerned, but the respective departments decide whether they wish to allow all who register to continue through the year or to conduct preliminary tests for the elimination of any who do not show sufficient promise of attaining the required standard. Some departments
may wish to give a preliminary comprehensive examination over their first three years' work, even during the first week of the course, and on the basis of this examination require unqualified students to withdraw with a grade of W. All students registered for these courses are at liberty to drop them at any time with this same grade.

The assignment of credit and honors to students who complete these courses is based entirely upon the final examination given at the end of the second semester, no credit being given for the completion of the first semester alone. There are three classifications: "Recommended for Honors," "Passed," and "Failed." For purposes of record the Registrar's office lists those classified as "Recommended for Honors" as having received a grade of 1, those classified as "Passed" as having received a grade of 2, and those classified as "Failed" as having received a grade of W. Students who achieve either of the first two classifications receive 4 units of credit.

Those students who are finally approved by the Honors Committee receive Departmental Honors in their respective departments and are officially recognized by their college for outstanding achievement.

**INDEPENDENT STUDY**

In addition to the encouragement for superior scholarship provided under the preceding section on Departmental Honors, this college permits certain individuals of high ability to do by independent study a portion of the work for the bachelor's degree.

These students register at registration time but are excused from the usual routine of class attendance and semester examinations. Instead each student submits a thesis and takes a comprehensive examination covering his field of study. This examination is written or oral, or both, as the committee may elect. Designated members of the major department act as advisers to the individual student, and conferences of such length and nature as may be needed to guide him in his chosen field of work are held.

It is desired that application be made in person some time before registration. To be eligible for consideration students must have a scholastic average of 2 and have completed all specific course requirements for graduation. Applications must contain an exact statement of the work proposed and must be accompanied by written approval of the major professor, dean, and parents of the student who is under twenty-one years of age.

**SPECIALIZED CURRICULA**

Within the College of Liberal Arts several professional and preprofessional curricula are offered:

**For Premedical and Predental Students**

The courses outlined in the Department of Zoology and other departments of the University offer opportunities to students to complete all premedical and predental requirements.

The minimum requirement for entrance to medical schools is 60 units of college work in institutions approved by the Council on Medical Education and Hospitals. A majority of the leading medical colleges require one or two years more of college preparation than the minimum requirement of the Association of American Medical Colleges.

The following schedule of subjects is based on the average premedical requirements existing in medical schools:
### Outline of Subjects Required

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological science</td>
<td>16</td>
</tr>
<tr>
<td>Chemistry</td>
<td>12</td>
</tr>
<tr>
<td>English</td>
<td>6</td>
</tr>
<tr>
<td>Physics</td>
<td>8</td>
</tr>
<tr>
<td>French or German</td>
<td>12-16</td>
</tr>
</tbody>
</table>

### Subjects Strongly Urged

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced courses in biology</td>
<td>4-6</td>
</tr>
<tr>
<td>Additional courses in chemistry</td>
<td>3-6</td>
</tr>
<tr>
<td>Psychology</td>
<td>3-6</td>
</tr>
</tbody>
</table>

### Other Suggested Electives

- English (additional), economics, history, sociology, political science, logic, mathematics, Latin, and drawing are suggested as electives.
- Students should consult the adviser of premedical students, Department of Zoology, and plan their schedules of work in accordance with the specific requirements of the particular medical school they wish to attend.
- A scholastic aptitude test for medical students is given once each year by the Department of Zoology for the Association of American Medical Colleges. Each premedical student should take this test during his last year of residence. Many medical schools require this test as one of the prerequisites to admission.

### For Pre-Law Students

Prospective law students are advised that the successful study of law requires high intellectual maturity. For admission, the College of Law requires credit for two full years of the curriculum of the Liberal Arts College. Increasing numbers now enter upon the study of law after graduation from college. Two years of successful college training and three years of law lead to the degree of LL.B.; three years of successful college training and three years of law lead to the combined degrees of A.B. or B.S. and LL.B.; four years of college training and three years of law lead to the degrees of A.B. or B.S. and J.D. Pre-law students should study the statement of requirements on pages 108 and 109 and secure counsel from the pre-law adviser in the Department of History and Political Science.

### For Pre-Education Students

The minimum requirements for admission to the general curriculum in the College of Education are 60 units in the College of Liberal Arts with a grade average of 3 or better. Those who wish to enter upon the professional teachers’ curriculum should in their first two years follow closely the program of studies outlined on page 111.

### SCHOOL OF BUSINESS AND PUBLIC ADMINISTRATION

The School of Business and Public Administration is a professional school which combines a broad cultural background with an opportunity for concentration in ten professional fields of study:

I. Accounting  
II. Finance  
III. General business  
IV. Marketing  
V. Secretarial training  
VI. Teaching commercial subjects  
VII. Combination law and business administration  
VIII. Government service  
IX. Foreign service  
X. Social work
DEGREES CONFERRED

The degree of Bachelor of Science in Business Administration will be conferred upon students who complete a curriculum in one of the fields I to VII.

The degree of Bachelor of Science in Public Administration will be conferred upon students who complete a curriculum in one of the fields VIII to X.

REQUIREMENTS FOR GRADUATION

To secure either degree the student must satisfactorily complete 125 units of work.

The required work is divided into three groups:

I. Courses required of all students to provide a cultural background and an appreciation of the physical and social environment together with a knowledge of subject matter basic to all types of administration: accounting, business law, statistics, and principles of organization and administration.

II. Courses in major field of concentration. Opportunity to concentrate is provided in ten major fields. The choice of such a major should be made as early as possible in the student's course and in no case later than the Junior year.

III. In addition to groups I and II, students will choose free electives to make a total of 125 units.

REQUIREMENTS FOR BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

I. Curriculum required of all students working for the degree:

Freshman Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>First Semester</th>
<th>Units</th>
<th>Second Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1a (Fresh. Comp.)</td>
<td>3</td>
<td>English 1b (Fresh. Comp.)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>4</td>
<td>Science</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Military</td>
<td>1</td>
<td>Military</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Phys. ed.</td>
<td>1½</td>
<td>Phys. ed.</td>
<td>1½</td>
<td></td>
</tr>
<tr>
<td>Bus. Adm. 15 (Orientation)</td>
<td>1</td>
<td>Bus. Adm. 11 (Econ. Geography)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>or Bus. Adm. 6 (Intro. to Bus.)</td>
<td>3</td>
<td>or Bus. Adm. 6 (Intro. to Bus.)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Electives*</td>
<td>4</td>
<td>Electives*</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16½</td>
<td>Total</td>
<td>15½</td>
<td></td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>First Semester</th>
<th>Units</th>
<th>Second Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities</td>
<td>4</td>
<td>Humanities</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Economics 2a (Principles)</td>
<td>3</td>
<td>Economics 2b (Principles)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bus. Adm. 31a (Prin. of Acct.)</td>
<td>3</td>
<td>Bus. Adm. 31b (Prin. of Acct.)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Military</td>
<td>1</td>
<td>Military</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Math. 69a (Bus. Math.)</td>
<td>2</td>
<td>Math. 69b (Bus. Math.)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Pol. Sci. 51† (Govt. of U.S.)</td>
<td>3</td>
<td>Pol. Sci. 62† (St. &amp; County Govt.)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>Total</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

* Students planning to teach commercial subjects should elect Psychology 1a, and Office Training (Bus. Adm. 76a-76b) in their Sophomore year. Students planning to major in accounting should elect Principles of Accounting in their Freshman year.

† Students electing two years of foreign language are excused from political science in the Sophomore year.
MAJORS IN BUSINESS ADMINISTRATION

II. In addition to these courses required of all, each student must complete the requirements in one of the following fields:

Accounting

A major for students who desire to prepare either for public accounting work or for various types of accounting connected with corporate enterprise. Eighteen units must be selected from the following:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Adm. 131a, b (Inter. Acct’g)</td>
<td>6</td>
</tr>
<tr>
<td>Bus. Adm. 133 (Cost Acct’g)</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Adm. 194 (Auditing)</td>
<td>3</td>
</tr>
</tbody>
</table>

Finance

A major for students who desire to prepare for work in the fields of investment, brokerage, insurance, and banking. Eighteen units must be selected from the following:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Adm. 138 (Fin. &amp; Acct. Control)</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Adm. 141 (Bus. Finance)</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Adm. 151a, b (Insurance, Theory &amp; Practice)</td>
<td>6</td>
</tr>
</tbody>
</table>

General Business

A major for students who at the time of their admission to the University have not determined upon their fields of work; or who desire to acquire a knowledge of those fundamentals which will be useful regardless of the particular field of business chosen as a vocation. Eighteen units must be selected from the following:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Adm. 138 (Fin. &amp; Acct. Control)</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Adm. 141 (Bus. Finance)</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Adm. 151a (Insurance)</td>
<td>3</td>
</tr>
<tr>
<td>Economics 174a, b (Pub. Utilities)</td>
<td>4</td>
</tr>
<tr>
<td>Economics 172 (Govt. &amp; Bus.)</td>
<td>3</td>
</tr>
<tr>
<td>Economics 105 (Labor Problems)</td>
<td>3</td>
</tr>
<tr>
<td>Economics 145 (Pub. Finance)</td>
<td>3</td>
</tr>
<tr>
<td>Economics 121 (Transportation)</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Adm. 131a, b (Inter. Acct.)</td>
<td>6</td>
</tr>
<tr>
<td>Economics 204 (Econ. Dynamics)</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Adm. 164 (Advertising)</td>
<td>3</td>
</tr>
<tr>
<td>Sociology 81 (Intro. to Soc.)</td>
<td>3</td>
</tr>
<tr>
<td>Met. 122a (Human Eng.)</td>
<td>2</td>
</tr>
</tbody>
</table>
Marketing

A major for students who desire to prepare for work in the fields of marketing, merchandising, and advertising. Eighteen units must be selected from the following, including starred courses:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Adm. 141a (Bus. Finance)</td>
<td>3</td>
<td>Bus. Adm. 163* (Retail Store Mgt.)</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Adm. 162 (Prin. of Selling)</td>
<td>3</td>
<td>Agr. 105 (Mgt. Farm Prod.)</td>
<td>3</td>
</tr>
<tr>
<td>H. Econ. 94 (Textiles)</td>
<td>2</td>
<td>H. Econ. 146 (The Consumer)</td>
<td>3</td>
</tr>
<tr>
<td>H. Econ. 104 (Buying Textiles)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Secretarial Training

A major designed to enable students to obtain entrance into the vocation of their choice. A knowledge of secretarial work often enables one to secure a position and practical experience in business pending the time when an opening may occur in a more remunerative position. Eighteen units must be selected from the following:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus. Adm. 76a, b (Office Training)</td>
<td>8</td>
<td>English 23 (Bus. Eng.)</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Adm. 170a, b (Adv. Secy. Work)</td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Teaching Commercial Subjects

A major offered with the co-operation of the College of Education designed to train teachers of commercial subjects for our secondary schools. Students desiring a special certificate enabling them to teach commercial subjects only should register in the School of Business and Public Administration. Such students are advised to major in Secretarial Training and elect the necessary courses in education required for a special certificate.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE IN PUBLIC ADMINISTRATION

I. Curriculum required of all students working for this degree. Students wishing to major in government service, foreign service, or social work will register for the following lower-division courses:

**Freshman Year**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1a (Fresh. Comp.)</td>
<td>3</td>
<td>English 1b (Fresh. Comp.)</td>
<td>3</td>
</tr>
<tr>
<td>Science†</td>
<td>4</td>
<td>Science†</td>
<td>4</td>
</tr>
<tr>
<td>History 1a, 11, or 17at</td>
<td>3</td>
<td>History 1b, 12 or 17bt</td>
<td>3</td>
</tr>
<tr>
<td>Foreign language§ (or elective)</td>
<td>4</td>
<td>Foreign language§ (or elective)</td>
<td>4</td>
</tr>
<tr>
<td>Military or (Women) Soc. Fund</td>
<td>1</td>
<td>Military</td>
<td>1</td>
</tr>
<tr>
<td>Phys. ed.</td>
<td>1</td>
<td>Phys. ed.</td>
<td>½</td>
</tr>
<tr>
<td>Bus. Adm. 13 (Orientation)</td>
<td>1</td>
<td>Total</td>
<td>16½-17</td>
</tr>
</tbody>
</table>

Total 16½-17

* Required course.
† Students who desire to major in social work must present 8 units in biology for their science work.
‡ Those who select the foreign service curriculum will take History 17a-17b, or 11 and 12. Those who select the government major will take History 1a-1b. Students selecting the social work major will take Psychology 1a-1b instead of history.
§ Students who select the foreign service major will elect 16 units in one foreign language, students in the government service major will elect Business Administration 31a-31b, and those in the social work major will substitute Sociology 81 for Political Science 51.
**Sophomore Year**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Units</th>
<th>Second Semester</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subject</strong></td>
<td></td>
<td><strong>Subject</strong></td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td>4</td>
<td>Humanities</td>
<td>4</td>
</tr>
<tr>
<td>Economics 2a (Principles)</td>
<td>3</td>
<td>Economics 2b (Principles)</td>
<td>3</td>
</tr>
<tr>
<td>Pol. Sci. 51 (Natl. Govt. of U.S.)</td>
<td>3</td>
<td>Pol. Sci. 62 (State &amp; County Govt.)</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics 69a (Bus. Math.)</td>
<td>2</td>
<td>Mathematics 69b (Bus. Math.)</td>
<td>2</td>
</tr>
<tr>
<td>Military</td>
<td>1</td>
<td>Military</td>
<td>1</td>
</tr>
<tr>
<td>Electives*</td>
<td>4</td>
<td>Electives</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td><strong>Total</strong></td>
<td>17</td>
</tr>
</tbody>
</table>

**MAJORS IN PUBLIC ADMINISTRATION**

II. In addition to the required courses listed each student working for a degree in public administration will complete the courses required in one of the following fields:

**Government Service**

A major designed to train for positions in national, state, or local government. All of the following courses are required:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pol. Sci. 131a, b (European Govts.)</td>
<td>6</td>
<td>Econ. 145 (Pub. Finance)</td>
<td>3</td>
</tr>
<tr>
<td>Pol. Sci. 153 (Mun. Govt.)</td>
<td>2</td>
<td>Econ. 174a, b (Pub. Utilities)</td>
<td>4</td>
</tr>
<tr>
<td>Pol. Sci. 154 (Pol. Parties)</td>
<td>2</td>
<td>Econ. 148 (Money &amp; Banking)</td>
<td>3</td>
</tr>
<tr>
<td>Pol. Sci. 171 (Nat. Adm.)</td>
<td>3</td>
<td>Bus. Adm. 120a, b (Com. Law)</td>
<td>6</td>
</tr>
<tr>
<td>Pol. Sci. 182 (State Adm.)</td>
<td>3</td>
<td>Bus. Adm. 137a, b (Govt. Acct.)</td>
<td>4</td>
</tr>
<tr>
<td>Pol. Sci. 165 (Const. Law)</td>
<td>3</td>
<td>Bus. Adm. 55 (Statistics)</td>
<td>4</td>
</tr>
<tr>
<td>Hist. 117a, b (Am. Const.)</td>
<td>4</td>
<td>Electives</td>
<td>13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Foreign Service**

A major designed to train for positions in the diplomatic and consular service. All of the following courses are required:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pol. Sci. 131a, b (European Govts.)</td>
<td>6</td>
<td>Bus. Adm. 11 (Econ. Geog.)</td>
<td>3</td>
</tr>
<tr>
<td>Pol. Sci. 153 (Am. Foreign Policy)</td>
<td>3</td>
<td>Bus. Adm. 120a, b (Com. Law)</td>
<td>6</td>
</tr>
<tr>
<td>Pol. Sci. 164 (Internat. Relations)</td>
<td>3</td>
<td>Bus. Adm. 55 (Statistics)</td>
<td>4</td>
</tr>
<tr>
<td>Pol. Sci. 158 (International Law)</td>
<td>3</td>
<td>Econ. 117a (International Trade &amp; Finance)</td>
<td>3</td>
</tr>
<tr>
<td>Hist. 105a, b (19th Cent. Europe)</td>
<td>6</td>
<td>Econ. 148 (Money &amp; Banking)</td>
<td>12</td>
</tr>
<tr>
<td>Hist. 215a, b (30th Cent.)</td>
<td>4</td>
<td>Electives</td>
<td></td>
</tr>
<tr>
<td>Hist. 119a, b (Later U.S.)</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Social Work**

A major designed for students who intend to do social work. Its aim is twofold: (1) to give an introduction to the problems, theory and practice of modern social work and (2) to supply the basis for systematic study in professional schools of social work. Forty units are required including all starred courses:

* Students who select the foreign service major will elect 16 units in one foreign language, students in the government service major will elect Business Administration 31a-31b, and those in the social work major will substitute Sociology 81 for Political Science 51.
<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agric. 102 (Rural Sociology)</td>
<td>3</td>
</tr>
<tr>
<td>Sociology 181* (Prin. of Soc.)</td>
<td>3</td>
</tr>
<tr>
<td>Sociology 182* (Soc. Pathology)</td>
<td>3</td>
</tr>
<tr>
<td>Sociology 184 (Social Probs.)</td>
<td>3</td>
</tr>
<tr>
<td>Sociology 186* (Charities and Soc. Work)</td>
<td>2</td>
</tr>
<tr>
<td>Sociology 187* (Crime and Pun.)</td>
<td>2</td>
</tr>
<tr>
<td>Sociology 287a* (Seminar)</td>
<td>2</td>
</tr>
<tr>
<td>Econ. 105* (Labor Problems)</td>
<td>3</td>
</tr>
<tr>
<td>Bus. Adm. 108* (Statistics)</td>
<td>4</td>
</tr>
<tr>
<td>Bus. Adm. 120a, b (Bus. Law)</td>
<td>6</td>
</tr>
<tr>
<td>Phys. Ed. 192 Men (Health Educ.)</td>
<td>3</td>
</tr>
<tr>
<td>Phys. Ed. 191 Men (Playgrounds &amp; Recreation)</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bact. 137 (Pub. Hygiene)</td>
<td>2</td>
</tr>
<tr>
<td>Phys. Ed. 82 Women (Play &amp; Playgrounds)</td>
<td>2</td>
</tr>
<tr>
<td>Phys. Ed. 84 Women (First Aid)</td>
<td>1</td>
</tr>
<tr>
<td>Educ. 150 (Mental Hygiene)</td>
<td>2</td>
</tr>
<tr>
<td>Home Econ. 127 (Child Dev.)</td>
<td>3</td>
</tr>
<tr>
<td>Psych. 118 (Abnormal Psych.)</td>
<td>3</td>
</tr>
<tr>
<td>Home Econ. 137 (Family)</td>
<td>3</td>
</tr>
<tr>
<td>Zoology 114 (Eugenics)</td>
<td>2</td>
</tr>
<tr>
<td>Zoology 116 (Heredity)</td>
<td>2</td>
</tr>
<tr>
<td>Prescribed units in major</td>
<td>19</td>
</tr>
<tr>
<td>Elective units in major</td>
<td>21</td>
</tr>
</tbody>
</table>

**Business Administration and Law**

Students who wish to secure the combined degrees in Business Administration and Law will plan their work so that all courses required for the degree of Bachelor of Science in Business Administration will be completed at the end of the third year of their college residence. Such students will not be required to complete any of the regular majors in business administration. Instead they will elect the following courses: Economics 105, Business Administration 141, History 117a-117b, or History 119a-119b; and 6 units selected with the advice and approval of their major professor.

Such students may be excused from Business Administration 6, 11, 161, 120a-120b. In place of these courses they will register for: History 11, 12; Philosophy 12; Sociology 81; English 7a or 7b; and Speech 2a-2b.

* Required course.
COLLEGE OF MINES AND ENGINEERING

REQUIREMENTS FOR THE DEGREES OF BACHELOR OF SCIENCE IN CIVIL ENGINEERING, ELECTRICAL ENGINEERING, MECHANICAL ENGINEERING, AND MINING ENGINEERING

The engineering curricula are all rather rigidly prescribed and deviations therefrom may be made only with the permission of the Faculty. The Freshman year is the same in all these curricula, and an attempt is then made to give the students such information as will enable them, at the beginning of the Sophomore year, to select wisely the branch of engineering that will probably prove most congenial and which they are best qualified to follow. The choice between mechanical and electrical engineering does not have to be made until the beginning of the Junior year.

The College offers four-year courses leading to the degrees of Bachelor of Science in Civil, Electrical, Mechanical, and Mining Engineering. The requirements for graduation in each of the engineering curricula are outlined in the pages that follow.

Freshman Year
(Common to all Engineering Courses)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>II.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 1a or 2a (General)</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Eng. 1a (Composition)</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Math. 20 (Algebra)</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Math. 24 (Trigonometry)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Me.A. 1 or 31 (Eng. Draw.)</td>
<td>0</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Mil. 1a (Sci and Tac.)</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Phys. Ed 25 (Gen. Gym.)</td>
<td>0</td>
<td>2</td>
<td>½</td>
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</tr>
<tr>
<td>Totals</td>
<td>11</td>
<td>17</td>
<td>16½</td>
</tr>
</tbody>
</table>

COURSE LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN CIVIL ENGINEERING

This course is designed to give the student a broad training in the fundamentals of civil engineering. By building on this foundation, he should be able to succeed in any of the specialized branches of the profession, such as structural, highway, irrigation, railroad, or sanitary engineering. The curriculum may be analyzed as follows:

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics, physics, chemistry, and geology or astronomy</td>
<td>45</td>
</tr>
<tr>
<td>Social studies</td>
<td>12</td>
</tr>
<tr>
<td>Electrical and mechanical engineering and mechanic arts</td>
<td>15</td>
</tr>
<tr>
<td>Civil engineering</td>
<td>53</td>
</tr>
<tr>
<td>Electives</td>
<td>10</td>
</tr>
<tr>
<td>Military</td>
<td>4</td>
</tr>
<tr>
<td>Physical education</td>
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<tr>
<td>Total for graduation</td>
<td>140</td>
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123
Sophomore Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>U.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 1 (Elem. Surv.)</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>C.E. 25 (Mats. Const.)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Math. 100a (Dif. Calc.)</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Mil. 2a (Sci. and Tac.)</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Physics 1a (Engineering)</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>11</td>
<td>14</td>
<td>18</td>
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</table>

First Semester

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>U.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 2 (Top. &amp; Min. Surv.)</td>
<td>2</td>
<td>3</td>
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<tr>
<td>Math. 100b (Int. Calc.)</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Math. 112a (Anal. Mech.)</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Mil. 2b (Sci. and Tac.)</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Physics 1b (Engineering)</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>12</td>
<td>11</td>
<td>18</td>
</tr>
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</table>

Second Semester

Junior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>U.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 103 (Adv. Surv.)</td>
<td>1</td>
<td>6</td>
<td>3</td>
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<tr>
<td>C.E. 114R (Test. Lab.)</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>C.E. 114R (Mech. Mats.)</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>C.E. 125 (Graph. Stat.)</td>
<td>0</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>E.E. 126aR (Dir. Cur.)</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Geol. 1aR (Gen. Geol.)</td>
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<td>0</td>
<td>3</td>
</tr>
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<td>Astron. 101a (Eng. Ast.)</td>
<td>(1)</td>
<td>(3)</td>
<td>(2)</td>
</tr>
<tr>
<td>Math. 112b (Anal. Mech.)</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>12</td>
<td>17</td>
<td>18</td>
</tr>
</tbody>
</table>

First Semester

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>U.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 110 (R.R. Surv.)</td>
<td>1</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>C.E. 111L (Hyd. Lab.)</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>C.E. 111R (Hydraulics)</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>C.E. 122 (Highways)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>C.E. 126 (Theory Struct.)</td>
<td>1</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>E.E. 126bR (Alt. Cur.)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>M.E. 126 (Stm., Gas., Pow.)</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>12</td>
<td>17</td>
<td>18</td>
</tr>
</tbody>
</table>

Second Semester

Senior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>U.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 106R (Conc. Des.)</td>
<td>1</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>C.E. 106L (Cem. &amp; Conc.)</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>C.E. 107 (Steel Mills)</td>
<td>1</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>C.E. 115 (Bus. Law for Engineers)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>C.E. 137 (Water Supply)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Econ. 101 (Engr. Econ.)</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>9</td>
<td>15</td>
<td>18</td>
</tr>
</tbody>
</table>

First Semester

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>U.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 108 (Bridges)</td>
<td>1</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>C.E. 113 (Torq. Des.)</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>C.E. 124 (Pavements)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>C.E. 129 (Foundations)</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>C.E. 138 (Sewerage)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Adm. 130 (Acct.)</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>11</td>
<td>12</td>
<td>17</td>
</tr>
</tbody>
</table>

Second Semester

COURSE LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

This course is designed to train the student thoroughly in the fundamentals of modern electrical engineering. The curriculum may be analyzed as follows:

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics, physics, and chemistry</td>
<td>48</td>
</tr>
<tr>
<td>Social studies</td>
<td>14</td>
</tr>
<tr>
<td>Civil and mechanical engineering and mechanic arts</td>
<td>34</td>
</tr>
<tr>
<td>Electrical engineering</td>
<td>31</td>
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<tr>
<td>Electives</td>
<td>8</td>
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<tr>
<td>Military</td>
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</tr>
<tr>
<td>Physical education</td>
<td>1</td>
</tr>
<tr>
<td>Total for graduation</td>
<td>140</td>
</tr>
</tbody>
</table>

* Plus electives.

For descriptions of courses offered in the Department of Civil Engineering see page 162.
COURSE LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

This course deals with engines and other machinery, and with mechanical appliances. A student who has satisfactorily completed it should be able to engage in design work, installation, or operation and maintenance. The curriculum may be analyzed as follows:

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics, physics, chemistry, and metallurgy</td>
<td>45</td>
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<tr>
<td>Social studies</td>
<td>12</td>
</tr>
<tr>
<td>Civil and electrical engineering</td>
<td>15</td>
</tr>
<tr>
<td>Mechanical engineering and mechanic arts</td>
<td>49</td>
</tr>
<tr>
<td>Electives</td>
<td>14</td>
</tr>
<tr>
<td>Military</td>
<td>4</td>
</tr>
<tr>
<td>Physical education</td>
<td>1</td>
</tr>
<tr>
<td>Total for graduation</td>
<td>140</td>
</tr>
</tbody>
</table>

* Plus electives.

For descriptions of courses offered in the Department of Electrical Engineering see page 178.
**UNIVERSITY OF ARIZONA RECORD**

**Freshman Year**
(Common to all Engineering Courses)

**Sophomore Year**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>U.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.E. 1 (Elem. Surv.)</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Math. 100a (Diff. Calc.)</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>M.E. 21 (Mechanisms)</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Me.A. 3 (Pat. Mak.)</td>
<td>0</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Mil. 2a (Sci. and Tac.)</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Physics 1a (Engineering)</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Second Semester</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math. 100b (Int. Calc.)</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Math 112a (Anal. Mech.)</td>
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<td>0</td>
<td>3</td>
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<tr>
<td>Me.A. 4 (Forge)</td>
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<td>Met. 116 (Alloys H. Trt.)</td>
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<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Mil. 2b (Sci. and Tac.)</td>
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<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Physics 1b (Engineering)</td>
<td>3</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Totals</td>
<td>11</td>
<td>20</td>
<td>18</td>
</tr>
</tbody>
</table>

**Junior Year**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>U.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.E. 114R (Mech. Mats.)</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>E.E. 126R (Dir. Cur.)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>E.E. 126L (Dir. Cur.)</td>
<td>0</td>
<td>3</td>
<td>1</td>
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<tr>
<td>Math. 112b (Anal. Mech.)</td>
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<td>0</td>
<td>3</td>
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<tr>
<td>M.E. 103L (Ht. Eng.)</td>
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<td>1</td>
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<tr>
<td>M.E. 105a (Mach. Shop)</td>
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<td>2</td>
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<tr>
<td>Me.A. 105b (Mach. Shop)</td>
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<td></td>
</tr>
<tr>
<td>Second Semester</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.E. 111R (Hydraulics)</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>E.E. 126L (Alt. Cur.)</td>
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<td>0</td>
<td>2</td>
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<tr>
<td>E.E. 126L (Alt. Cur.)</td>
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<td>1</td>
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<td>M.E. 105R (Int. Comb. Eng.)</td>
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<td>3</td>
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<td>M.E. 104L (Gas. Eng. Lab.)</td>
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<td>1</td>
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<tr>
<td>M.E. 125b (Mach. Des.)</td>
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<td>3</td>
<td>2</td>
</tr>
<tr>
<td>E.E. 126R (Alt. Cur.)</td>
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<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
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<td></td>
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<tr>
<td>Totals</td>
<td>12</td>
<td>15</td>
<td>17</td>
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**Senior Year**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>U.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Econ. 101 (Engr. Econ.)</td>
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<td>3</td>
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<td>M.E. 135a (Pow. Eq. Des.)</td>
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<td>3</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 137a (Pow. Eq. Des.)</td>
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<td>3</td>
<td>1</td>
</tr>
<tr>
<td>M.E. 131 (Thermodynamics)</td>
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<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
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<tr>
<td>Totals</td>
<td>10</td>
<td>9*</td>
<td>18</td>
</tr>
<tr>
<td>Second Semester</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus. Adm. 130 (Acctg.)</td>
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<td>0</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 127b (Mech. Lab.)</td>
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<td>6</td>
<td>2</td>
</tr>
<tr>
<td>M.E. 134 (Pow. Pitts.)</td>
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<td>0</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 135b (Pow. Eq. Des.)</td>
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<td>3</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 146 (Seminar)</td>
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<td>0</td>
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</tr>
<tr>
<td>Electives</td>
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<td></td>
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</tr>
<tr>
<td>Totals</td>
<td>10*</td>
<td>9*</td>
<td>18</td>
</tr>
</tbody>
</table>

**AERONAUTICAL ENGINEERING AND AVIATION**

The University of Arizona does not offer a course or degree in aeronautical engineering. Students who desire to perfect themselves in this work should take the first two years of the mechanical engineering curriculum and then transfer to some institution that offers the degree desired.

Students who wish to take the two years of college work required for admission to a United States Military Ground School should take the following course:

**Freshman Year**
(Common to all Engineering Courses)

* Plus electives.
For descriptions of courses offered in the Department of Mechanical Engineering see page 197.
COURSE LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN MINING ENGINEERING

This course is designed to furnish the broadest foundation for the practice of mining engineering that it is possible to obtain in four years. Because of the number and diversity of the subjects that must be studied, no specialization is possible, and the graduate is equally well prepared to follow mining engineering proper, metallurgy, ore dressing, or mining geology. The mature student who has definitely selected the branch of the profession that he intends to follow will, therefore, find it very advantageous to remain for a fifth year during which he may concentrate his attention upon relatively advanced courses in his specialty. The curriculum may be analyzed as follows:

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics, physics, and chemistry</td>
<td>53</td>
</tr>
<tr>
<td>Social studies</td>
<td>12</td>
</tr>
<tr>
<td>Geology and mineralogy</td>
<td>20</td>
</tr>
<tr>
<td>Mining engineering, metallurgy, and ore dressing</td>
<td>23</td>
</tr>
<tr>
<td>Civil, electrical, and mechanical engineering</td>
<td>18</td>
</tr>
<tr>
<td>Electives</td>
<td>9</td>
</tr>
<tr>
<td>Military</td>
<td>4</td>
</tr>
<tr>
<td>Physical education</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total for graduation</strong></td>
<td><strong>140</strong></td>
</tr>
</tbody>
</table>

Freshman Year

(Common to all Engineering Courses)

Sophomore Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>U.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 3 (Qual. Anal.)</td>
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<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Math. 100a (Dif. Calc.)</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Mil. 2a (Sci. and Tac.)</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Mineralogy 11 (Cry. and B. P. Analysis)</td>
<td>2</td>
<td>6</td>
<td>3</td>
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<tr>
<td>Min.E. 101 (Develop.)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Physics 1a (General)</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>12</strong></td>
<td><strong>23</strong></td>
<td><strong>19</strong></td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>U.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 101 (Vol. Anal.)</td>
<td>1</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>C.E. 1 (Elem. Surv.)</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Geol. 101 (Phys. Geol.)</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Math. 112a (Anal. Mech.)</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Met. 102R (Assaying)</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Met. 102L (Assaying)</td>
<td>0</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Met. 111 (Gen. Met. &amp; Cop.)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>12</strong></td>
<td><strong>18</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

C.E. 2 (Top. & Mine Sur.)        | 2    | 3    | 3  |
C.E. 114R (Mech. Mtls.)          | 3    | 3    | 3  |
Geol. 102 (Hist. Geol.)          | 2    | 3    | 3  |
Math. 112b (Anal. Mech.)         | 3    | 3    | 3  |
Min.E. 11 (Met. Lead, Zinc, Iron) | 3  | 0    | 2  |
Min. 114 (Petrology)            | 0    | 6    | 2  |
Min.E. 103 (Operations)          | 2    | 0    | 2  |
**Totals**                      | **15** | **12** | **18** |
**Senior Year**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>U.</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>First Semester</em></td>
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<tr>
<td>Econ. 101 (Engr. Econ.)</td>
<td>3</td>
<td>0</td>
<td>3</td>
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<tr>
<td>Geol. 103 (Ore Dep.)</td>
<td>3</td>
<td>0</td>
<td>3</td>
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<tr>
<td>Met. 107R (Ore Dressing)</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Met. 119R (Metallography)</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Met. 120 (Met. Gold, Silver)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
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<td></td>
<td>5</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>12*</td>
<td>0†</td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lec.</th>
<th>Lab.</th>
<th>U.</th>
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<tbody>
<tr>
<td><em>Second Semester</em></td>
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<tr>
<td>Bus. Adm. 130 (Acctg.)</td>
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<td>3</td>
</tr>
<tr>
<td>Geol. 105 (Field)</td>
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<td>6</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 126 (St. &amp; Gas. Pow.)</td>
<td>3</td>
<td>0</td>
<td>3</td>
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<tr>
<td>Met. 107L (Ore Dressing)</td>
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<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Min.E. 105 (Design) or M.E. 115</td>
<td></td>
<td>6</td>
<td>2</td>
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<tr>
<td>Min.E. 104 (Operations)</td>
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<td>2</td>
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<tr>
<td>Electives</td>
<td></td>
<td></td>
<td>4</td>
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<tr>
<td><strong>Totals</strong></td>
<td>10†</td>
<td>15†</td>
<td>18</td>
</tr>
</tbody>
</table>

* All students who intend to specialize in mining engineering rather than metallurgy are advised to schedule C.E. 111R (Hydraulics) either as an elective or a substitution by petition.

† Plus electives.

For description of courses offered in the Department of Mining Engineering and Metallurgy, see page 198.
THE GRADUATE COLLEGE

REQUIREMENTS FOR
ADVANCED STUDIES IN THE UNIVERSITY

The University offers graduate instruction in such departments as are adequately equipped for advanced work. Major work leading to the master's degree is offered in all of the following fields, the degree of Doctor of Philosophy in departments starred (*):

**Fine Arts**—Music.

**Humanities**—English, French, Spanish.

**Social Sciences**—Anthropology, business administration, economics, education, history, political science, psychology, household economics, sociology.

**Biological Sciences**—Agricultural chemistry and soils, agronomy, animal husbandry, bacteriology, *botany (including ecology, morphology, physiology, and taxonomy)*, dairy husbandry, entomology, horticulture, foods and nutrition, nutrition, plant pathology, poultry husbandry, *zoology*.

**Physical Sciences**—Astronomy, *chemistry, *geology (including mineralogy and paleontology), mathematics, physics, agricultural engineering, civil engineering, electrical engineering, mechanical engineering, metallurgy, mining.

The several professional engineering degrees are also offered under special requirements as hereinafter set forth.

**ADMISSION**

Graduates of the University of Arizona and of other institutions in the accepted list will be admitted to graduate courses for which they are prepared. Graduate credit will be granted only when undergraduate requirements of the respective departments (in no case less than 12 units of undergraduate work basic to the subject of the graduate course) are satisfactorily met. Application for admission to the Graduate College must be made on the blank furnished by the University and returned to the Dean of the College. In the case of an applicant from another institution, this application must be accompanied by an official transcript of all undergraduate and graduate work done and degrees received. An additional amount of undergraduate work will be required from a graduate of any college whose course of study is not equivalent to that prescribed by this University. Students whose preparation is such that they are unable temporarily to elect any courses which may count toward the master's degree will register as Provisional Graduate Students until such time as undergraduate deficiencies have been removed.

Admission to graduate study does not imply admission to candidacy for an advanced degree and gives no right or claim to be so admitted. Such candidacy is determined after the student has demonstrated by work done here the ability to do work of graduate character with originality and independence. Students entering the Graduate College should realize that their status is different from that of the undergraduate. Although administrative machinery cannot be wholly dispensed with, the primary aim of the graduate student should not be to meet requirements. Students should see in their graduate experience the opportunity to enlarge their knowledge and make themselves independent workers. To realize these ends, personal interest should carry
beyond the bounds of mere requirements. A mere accumulation of units or grades is not sufficient. Achievement should be limited only by the time, energy, and ability at the student's command.

A student of Senior standing, who has practically completed the requirements for graduation, may also register for graduate work if recommended by the head of the department concerned and approved by the Dean of the Graduate College. For such registration a petition for graduate credit in excess of Senior requirements is submitted through the Dean to the Committee on Graduate Study. This petition must be endorsed by the professor in charge of the course and by the student's major professor.

**COURSES ACCEPTED FOR GRADUATE CREDIT**

Upper-division courses (courses numbered 100-199) unless specifically marked "not for graduate credit" are acceptable but must be carried with a grade of 1 or 2. Graduate courses (courses numbered 200 and above) must carry a grade of 3 or better. In no course will a grade of 4 carry credit toward an advanced degree.

**REGISTRATION FOR GRADUATE WORK**

Every candidate for a higher degree is required to register at the University at the beginning of each semester of the academic year so long as any portion of the degree requirement, including the thesis, is in process of fulfillment, until the degree shall have been awarded or the candidate shall have received a formal certificate of leave of absence or of honorable dismissal from the University. A candidate doing thesis work in absentia, under leave of absence, must pay a $5 examination fee at the time the thesis is submitted and the final oral examination is held.

Extension courses given by the University Extension Division will be accepted for graduate credit only when they are of recognized graduate character and are given at places where library or laboratory conditions are particularly favorable for such courses. Applications for graduate credit for extension courses so given must be passed upon by the Committee on Graduate Study and must bear the approval of the head of the department concerned.

Graduate courses given as extension classes in Tucson by the University Extension Division will be allowed graduate credit when they meet all the requirements of those courses offered on the campus, and are taught by instructors of the University staff, who in regular sessions teach such courses. Graduate credit will also be given for upper-division courses which meet the requirements just stated, if the student has registered for graduate credit with the consent of the instructor and the Dean of the Graduate College, and provided the student receives a 1 or 2 in the course.

**REQUIREMENTS FOR THE DEGREES OF MASTER OF ARTS AND MASTER OF SCIENCE**

The degrees of Master of Arts (M.A.) and Master of Science (M.S.) will be conferred for advanced work done by students who have received the bachelor's degree from this institution or from one of similar standing. The master's degree implies advanced training gained through intensive study in a special field supplemented, if advisable, by study in supporting subjects. Thirty units of graduate work including the thesis are required. Not less than 15 units must be in a major field. Two or
more closely allied subjects may be combined to form a major. The major and supporting subjects shall include only upper-division and graduate courses, and at least 20 units of such graduate work must be completed while in residence at the University of Arizona. A minimum of two semesters in residence is required. (One summer session of 10 weeks is equivalent to a semester's residence.) On approval of the head of the department and the Committee on Graduate Study, thesis work may be done in absentia under the direct supervision and guidance of a member of the Faculty.

Each applicant for a master's degree shall submit to the Dean for approval on a form provided for that purpose, a program of study for the work proposed, duly approved by the major professor.

A thesis in the major field is required. The title and a brief outline of the thesis proposed, approved by the major professor, and on a blank provided, shall be filed with the Dean at least six months before the completion of graduate study. Two copies of the completed thesis shall be submitted to the major professor at least one week before the oral examination. Instructions relating to the form of the thesis may be obtained from the Dean. Following the final oral examination, the two copies of the thesis are filed with the Dean for subsequent deposition in the University Library, and a fee of $5 is paid to the University Comptroller to cover cost of binding.

A petition for advancement to candidacy for the degree sought must be filed with the Dean not later than the beginning of the last semester of work. Acceptance in candidacy shall be subject to final approval by the Committee on Graduate Study.

A candidate for the master's degree must pass a final examination conducted by the department in which the candidate's field of study lies. The examination shall be in part a defense of the thesis but in the main a general examination on subject matter related to the candidate's field of study. It shall be in part oral, or may be wholly so, at the option of the major professor. In case a written examination, in part, is deemed advisable, the departments of the candidate's field of study shall co-operate in preparing one set only of questions which will correlate as fully as possible the supporting subjects with the more important major field of study. At the final oral examination the Committee on Graduate Study shall be represented, and all members of the general faculties have the privilege of being present. Any candidate who fails in the final examination may, upon recommendation of the major professor and approval of the Graduate Study Committee, be granted a second examination after a lapse of at least one semester. The second examination is final.

The head of the department in which the candidate's major work lies shall designate as his major professor and general adviser some member of the department. The major professor shall approve the program of study and the thesis and shall select at least two members to serve with him as an advisory and examining committee under the approval of the Dean.

A certification that the thesis has been accepted and that all courses and examinations have been satisfactorily passed shall be filed together with the two duly approved copies of the thesis with the Dean not later than one week before the conferring of the degree.

**REQUIREMENTS FOR THE DEGREE OF MASTER OF MUSIC**

The requirements for the degree of Master of Music are the same as those outlined above for the degree of Master of Arts or Master of Science, with the exception that an extended original composition may be offered in lieu of a thesis.
ARTIST DIPLOMA IN APPLIED MUSIC

The Artist Diploma will be granted for advanced work done by students who have received the bachelor's degree from the University of Arizona or from a school of similar standing.

The work must be in advanced training gained through intensive study in the field of applied music (instrumental or vocal) supplemented by study in supporting subjects.

Thirty units of graduate work, including a public appearance in a full length recital (one hour or more), are required. Not less than 15 units must be in the major field. The supporting subjects shall include only upper-division and graduate courses and at least 20 of the 30 units required must be in residence. (A minimum of two semesters in residence is required.) The major in voice must pass an examination in the pronunciation of French, German, and Italian.

Each applicant for the Artist Diploma in Applied Music shall submit to the Dean of the Graduate College a program of study for the work proposed, duly approved by the major professor.

The judgment of proficiency in the recital shall rest with the Faculty of the School of Music.

SPECIAL PROFESSIONAL DEGREES

The professional degree of Civil Engineer (C.E.), Electrical Engineer (E.E.), Mechanical Engineer (M.E.), Metallurgical Engineer (E.Met.), Mining Engineer (E.M.), or Mining Geologist (Min.Geol.) may be conferred upon graduates of this institution or other institutions of equal standing who have met the requirements for the Bachelor of Science degree in the appropriate departments, subject, however, to the following conditions:

1. The degree shall be granted upon the basis of experience rather than upon academic study alone.

2. The student must have had at least four years of acceptable professional work in the branch of engineering in which the degree is sought. One year, and one year only, of acceptable graduate work (which may or may not have led to a graduate degree) may be accepted in lieu of two years of practical experience, and at least one year of experience must have been in responsible charge of work.

3. The Faculty of the College of Mines and Engineering shall be the judge of the acceptability of the experience record of a candidate for one of the degrees.

4. The Faculty of the College of Mines and Engineering may, if it so desires, require the submission of a satisfactory thesis or report in addition to the amount of experience outlined, and the acceptability of such thesis or report shall be determined by the said Faculty. The form of the thesis, if one is submitted, must conform to the specifications for theses as outlined by the Committee on Graduate Study.

The degree of Administrative Engineer of Mines (A.E.M.) or Administrative Metallurgical Engineer (A.E.Met.) is conferred upon students who have completed, to the satisfaction of the Faculty of the College of Mines and Engineering, the course in the Administration of Mineral Industries offered by that college. This course comprises approximately six months' study on the campus of business administration, finance, economics, etc., and more than two months' work in the plants and offices of some of the largest Arizona mining companies. Two-week periods of campus and field work alternate during the second semester. Admission to this course, which is directed by Dr. E. P. Mathewson, is granted only to men who already hold bachelor's degrees in mining or
metallurgical engineering. Furthermore, they must have had several years' successful experience during which they have demonstrated that they possess the qualities required for success in executive work, and they must either be selected or highly endorsed by their employers.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

Departments which are properly equipped and which possess special advantages for original investigation may accept prospective candidates for the degree of Doctor of Philosophy (Ph.D.). The degree is granted only to those who have attained proficiency in a chosen field and who have demonstrated their ability by examinations and by the production of a thesis which is an actual contribution to the fund of existing knowledge.

Preliminary Preparation—The prospective candidate must have received the bachelor's degree from this University or one of equal rank and must show evidence of a satisfactory amount of undergraduate work in subjects proposed for advanced study. For this purpose a qualifying examination will be required, to be taken at a time specified by the Committee on Graduate Study.

Residence and Credit Requirements—At least three years of study, with a minimum of 60 units of approved graduate work exclusive of thesis is necessary. The first two or the last year must be spent in residence at this University. If the student already holds the master's degree from this or another accredited institution, the residence and units of credit earned in obtaining that degree may be counted in partial fulfillment of these requirements.

Major and Minor Subjects—The student will choose a major subject and either one or two supporting minor subjects. The field of study to be chosen by the student may lie in one department except for essential related subjects, or it may represent a combination of departments. Not less than 36 units of work must be in the department of the major subject.

Program of Study—A program of study, recommended by the department or departments concerned, and an outline of the proposed thesis, approved by the major department, must be finally approved by the Committee on Graduate Study. This program and outline should be submitted, on forms provided by the Dean, as early as feasible and in any case not later than October 1 of the last year of study.

Foreign Language Requirement—Before the preliminary examination, the departments of French and German must certify that the student is proficient in these languages for purposes of research.

Preliminary or Qualifying Examination—Before admission to candidacy for the degree a general examination in the student's chosen field of study must be passed. This examination is intended to test the student's general fundamental knowledge of the fields of the major and minor subjects of study. It shall be in part oral, or may be wholly so, and shall be conducted before a committee of the Faculty appointed by the Dean upon consultation with the major department. This examination will be held toward the end of the second year of graduate work or not later than November 1 of the last year. Except by special permission of the Dean this examination may not be taken until the minor work has been completed.

Advancement to Candidacy—When the preliminary examination has been passed, the language requirements satisfied, and evidence shown of ability to carry on research work 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 November 1 of the academic year in which the degree is to be conferred.

Thesis—Two copies of the completed thesis, approved and accepted by the major department, must be filed with the Dean, following the final examination, and a Library binding fee of $5 must be paid to the University Comptroller. Prior to the awarding of the degree every successful candidate shall have made satisfactory arrangements to deposit in the University Library twenty-five printed copies of the thesis.

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 thesis and including whatever general questioning related to his field of study that may develop therefrom. This examination will be open to the public and will be held not later than May 20 of the academic year in which the doctorate is to be awarded. The exact time and place shall be announced at least one week in advance.

Other Examinations—Before admittance to the final examination, and in addition to the preliminary examination and the regular scheduled course examinations, the candidate may be required to take any other examinations, oral or written, that are thought proper by the departments concerned.
GENERAL DEPARTMENTS
OF THE UNIVERSITY

SCHOOL OF MILITARY SCIENCE AND TACTICS

General—The Reserve Officers’ Training Corps, and integral part of the University of Arizona, was established under the provisions of the Act of Congress dated June 4, 1920 (National Defense Act). In further support of this Act the Seventh State Legislature (1925) by specific enactment authorized the establishment of a School of Military Science and Tactics. From the beginning a completely equipped cavalry unit has been maintained, military training being confined exclusively to this branch of the service.

Objectives—The R.O.T.C. provides systematic military instruction with a twofold purpose—primarily to qualify students for positions of leadership in time of national emergency, and secondarily to provide the nation with an electorate informed of the purpose and necessity of a sane policy of national defense and of the strength and weaknesses of our present system.

Membership in the R.O.T.C. carries no legal obligation to serve in the army, or any of the armed forces, either in peace or in war. Aside from the actual and immediate value of this training to the individual, and its contingent value to the nation in an emergency, it has a very definite and practical value in peace in that it emphasizes discipline, leadership, and physical fitness, three essentials for success in any walk of life.

Courses Offered—The courses, conducted by regular army officers, cover four years of progressive training. The first two-year period is called the Basic Course and the second, the Advanced Course.

Basic Course—All male students of less than Junior standing, carrying 6 or more units of work, who are citizens of the United States, physically fit, and under the age of twenty-five years, are required to pursue this course. Three hours of instruction per week are given. Unless properly exempted the student cannot graduate from the University until this course is successfully completed.

Freshmen will be required to register for Military Science 1a-1b unless transferring military credit which may be equated as college credit. It is understood that when registration is granted in a course beyond the Freshman year the student is nevertheless required to complete two years of work in the Military Department in order to graduate.

Advanced Course—This course is elective and is limited to selected students who have successfully completed the Basic Course. Those enrolled must possess those mental, moral, physical, and leadership qualities necessary to fit them for reserve commissions. The advanced student is required to sign a contract with the government to continue in the R.O.T.C. until the completion of his military instruction, to devote five hours per week during such period to military training, and to pursue the courses of camp training during such period as prescribed by the Secretary of War. The student, under such contract, cannot graduate from the University until the advanced course is completed, unless he is sooner released by the government. The advanced course covers two academic years at the University and one summer training camp of approximately six weeks’ duration at Ft. Bliss, Texas.

The Cadet Regiment—The R.O.T.C. unit is organized as a cavalry regiment consisting of two squadrons of three dismounted troops each
and a mounted troop. All units are commanded by cadet officers and cadet noncommissioned officers. These are appointed at the beginning of each school year on the basis of grades, efficiency, and leadership ability.

**UNIFORMS AND EQUIPMENT**

**Basic Course**—All basic students are supplied with uniforms without cost. Students must purchase at their own expense a leather belt and laced boots of approved pattern, and appropriate textbooks. To cover the possible loss of the uniform and to provide funds for the purchase of the other articles enumerated above, the student must make a deposit of approximately $25 on day of registration. Approximately $15 of this deposit will be refunded to the student at the end of the college year or upon withdrawal from the course, if no loss occurs. To obtain refund on this deposit, property must be turned in within seven days after withdrawing from or completing the military course in which enrolled; otherwise deposit will be forfeited. The cost, plus 3 per cent, of any article of clothing not turned in will be deducted from the deposit and such articles will not be accepted for refund at any later date. Refunds on this deposit will be made up to June 30 of the current year.

**Advanced Course**—A student electing the advanced course is supplied with an officer’s uniform made to individual measurements. A deposit of $30, to be refunded at the close of the year, is required to cover possible loss of uniform and equipment. In addition, students are required to purchase officers’ boots and Sam Browne belts at their own expense at an approximate cost of $25. With the exception of ornaments and insignia this uniform and equipment is identical with that worn by the officers of the United States Army, and will be suitable for wear by the student when he is commissioned in the Organized Reserve Corps. At Summer Training Camp students are furnished with complete uniforms, quarters, meals, and medical attention by the government.

**MONEY ALLOWANCES**

**Basic Course**—None.

**Advanced Course**—Commutation of subsistence at the rate of about 25 cents per day for the two years including one summer vacation period, or a total of about $175. Uniform allowance of approximately $30 first year, and $10 for second year. Travel expenses to and from Summer Training Camp. Pay at Summer Training Camp at the rate of about 70 cents per day.

**MILITARY CREDITS FOR GRADUATION**

A minimum of 4 units in military science is required for graduation, consisting of 2 units for each of the basic years. Six units are given for the work of each of the Junior and Senior years, making a total of 16 units for the entire R.O.T.C. work.

**BENEFITS TO STUDENTS**

1. A military education which will qualify students, in case of emergency, to instruct untrained civilians in the duties of privates, corporals, and sergeants.

2. A preferred status among applicants for wartime officers’ training camps.
3. A knowledge of the purpose and necessity of a sane policy of national defense.
4. A thorough course in the fundamentals of equitation under expert instructors.
5. Expert instruction in rifle marksmanship.
6. Four college units toward a degree in any college, except the College of Law.

**Advanced Course**

1. A military education which will qualify students to render valuable service to their country in time of war as trained officers.
2. A commission as Second Lieutenant in the Officers' Reserve Corps, Army of the United States.
3. A complete and thorough course in horsemanship (equitation, care of animals, stable management).
5. Twelve college units toward a degree in any college except the College of Law.

**Military Fraternity**—Cadet officers who have exhibited unusually outstanding qualities of leadership, including high ideals of gentlemanly conduct and whose scholarship is above average, are, within fixed limitation as to number, selected for membership in a national military fraternity known as Scabbard and Blade.
PHYSICAL EDUCATION FOR MEN

The university authorities encourage sports on the athletic fields and in the gymnasium in such amount and of such character as are compatible with the educational aims of the University. Intercollegiate contests are held with the leading colleges and universities of Arizona, California, New Mexico, Texas, and occasionally with institutions in Nevada, Colorado, and Utah. All athletics are under the direct control of the Director of Athletics and Physical Education for Men.

The University is a member of the Border Intercollegiate Athletic Conference and upholds strict rules of eligibility. One year of residence is required of Freshmen and athletes transferring from an institution of collegiate rank, in order to take part in varsity competition. Freshman teams are encouraged and have separate coaches in all major sports.

The varsity football team plays a schedule of ten games. The basketball schedule usually contains about twenty games, and baseball about the same number. The track team has four meets each year. Cross-country running, boxing, polo, and tennis are minor sports.

The University has the largest and best gymnasium in the entire Southwest. An extensive intramural program has been developed, since the climate permits so many forms of outdoor athletics throughout the academic year. The orthopedic department has made progress in preventive as well as in corrective work not only in relation to those individuals who are exempt from military training because of some physical defects, but in relation to the serious students who wish health plus. The program in required physical education aims not only to develop the physical well-being but to develop a deep-seated carry-over spirit because of the educational phases emphasized in all courses offered.

All men students are required to pass a complete physical examination, as conducted by the University Physician. As a result of this examination, or any subsequent periodic examinations, and the advice of the University Physician, work in physical education adapted to the needs of each individual student is assigned. Those students excused from military training because of some disease, defect, or disability that can be remedied by physiotherapeutic measures are required to register for individual gymnastics. University credit is given for all courses in physical education. Students not able to swim 100 yards are required to register in Physical Education 26. The remaining students with Freshman standing and Sophomores exempt from military training will register for their respective courses in physical education.

A locker fee of $2, to cover the cost of the use of lockers and towels, is charged each semester for students registered in any physical education course for men. One dollar is refunded at the close of each semester if the towel is returned and the locker has not been damaged.

The first year in physical education is required of Freshmen.

For a description of courses offered in the Department of Physical Education for Men, see page 207.
INTRAMURAL ATHLETICS FOR MEN

Intramural athletics are founded upon the fact that every man enjoys the thrill of participating in sports. A relatively small number possess outstanding skill which places them on varsity teams, but the majority must depend upon some other means of gratifying their desire for sport. Therefore, the intramural program has been planned to give every man an opportunity to compete in a sport or sports suitable to his taste and ability.

Arizona has developed an extensive system of intramural athletics which furnishes exercise and recreation in the form of competitive sports for all men who care to take part and who are not at the time the sport is offered on a varsity or Freshman squad. The program covers a large field of sports which extend over the entire school year. Competition is entirely voluntary and a friendly rivalry exists among the competing organizations.

It is the desire of the Department of Athletics and Physical Education of the University of Arizona to achieve or promote the following aims or objectives through intramural sports: (1) health, (2) recreation, (3) general participation, (4) development of varsity material, (5) knowledge of sports, (6) permanent interest in sports throughout college and later life. Among extracurricular activities intramural athletics are of major importance. There has been a decided growth in general participation and a wonderful development of interest in intramural athletics at this institution in the last few years. Seventy per cent of the total number of men at the University of Arizona participate in some kind of voluntary intramural athletics.

Sport                                                                 Approximate date of starting
Fall swimming meet.                                             October 5, 6
Freshmen basketball.                                          October 11
Tennis.                                                       October 12
Fall track meet.                                               November 2, 3, 4
Basketball.                                                   November 8
Cross-country run.                                            November 18
Baseball.                                                     February 5
Volleyball.                                                   March 7
Spring track meet.                                           March 10, 11, 12
Softball.                                                    April 26
Spring swimming meet.                                      May 16, 17, 18

Individual Sports

Free throw contest.                                          October 27, 28
Wrestling (8 divisions).                               March 17, 18, 22
Boxing (8 divisions).                                      April 7, 8, 12
Handball tournament.                                      April 26
Horseshoe pitching.                                         April 26
Sigma Delta Psi.                                            March, April, May
PHYSICAL EDUCATION FOR WOMEN

REQUIRED PHYSICAL EDUCATION

Physical education is required of all lower-division women students registered for 6 or more units of University work. Each girl, after thorough medical and physical examinations, is assigned to the type of activity best suited to her. She may choose the sport she wishes if she is normally healthy and strong, if not, she is assigned to modified sports or corrective gymnastics or to a health-education class.

The University aims to save for each girl certain periods during the week which cannot be encroached upon by other demands. It is arranged to give each girl time for healthful, vigorous activity vital to youth, and instruction in recreative skills which may be engaged in throughout life as well as adding definitely to happiness while on the campus. (Physical Education 1a-1b, 2a-2b.) Locker and towel fee, $2 each semester. See “Expenses and Fees” for refund.

INTRAMURAL PROGRAM

A program of intramural sports and games is carried out each year. Hockey, swimming, baseball, basketball, tennis, track, athletics, marksmanship, archery, riding, golf, and horseshoes are directed by the physical education staff at 4:30 daily. This recreation is open to all women students without registration.

The Women's Athletic Association nominally controls this phase of the activity program. It has made big strides in developing initiative and leadership among the girls in the past few years. Competition through the meeting of teams or by telegraph of written records is carried on with other universities and colleges in tennis, archery, marksmanship, etc.

For a description of courses offered in the Department of Physical and Health Education for Women, see page 209.
HEALTH ADMINISTRATION

Each student is required to take a physical examination at the beginning of his first semester, and annually thereafter.

For the benefit of the registered students the University maintains on the campus an infirmary, having a staff of a physician and a resident trained nurse. The University Physician and the Health Committee keep in touch with students, and are promptly informed of all sickness and injuries, and endeavor to see that no one suffers from lack of proper care and treatment.

Medical services include physical examination, prescription of corrective gymnastics, the giving of medical advice, and the caring for cases of acute illness which may develop while students are in attendance at the University, provided that such cases can be cared for at the University Infirmary or at the student's place of residence. The University does not accept students with contagious or infectious diseases. When such cases develop they must be isolated and cared for in accordance with the laws of the state of Arizona. Students coming to the University with chronic ailments are informed of their condition and advised, but the University does not provide care or treatment for such cases.

Emergency cases, after first-aid care, may subsequently apply to the University Physician for attention. In cases where students require hospitalization for serious injuries or operations which cannot be performed at the University Infirmary, adequate facilities are to be found in Tucson. All expenses, including services for attending physicians, must be borne by the student. No operation is performed without the consent of the parent or guardian, except in emergencies.

Students are permitted of their own volition to engage at their own expense other physicians or nurses or the University Physician in a private capacity, but under such circumstances students cannot be admitted to the University Infirmary.
SUMMER SESSION, 1938

The University annually conducts a Summer Session on the University campus at Tucson. The Summer Session continues for ten weeks, being made up of two terms of five weeks each. Classes meet five days a week, a 2-unit course requiring five clock hours a week per term. The First Term of the 1938 Summer Session begins Monday, June 13, and ends Saturday, July 16. The Second Term begins Monday, July 18, and ends Saturday, August 20. Registration is held on the first day of each term. For registration after the first day a late registration fee of $2 is charged. Registration for credit will not be permitted after Monday, June 20, for the First Term or Monday, July 25, for the Second Term.

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 a statement of high-school credits on Certificate of Recommendation form, issued by the office of the State Superintendent of Public Instruction through the Registrar of the University of Arizona.

Students coming from other universities and colleges must present to the Registrar evidence that they are in good standing. Those who propose to become candidates for a degree must file a complete transcript of record.

Graduate students seeking an advanced degree must file evidence of having graduated from an approved university or college.

Other students will be permitted to pursue such courses as they are qualified to carry.

ACADEMIC CREDIT

The Summer Session is an integral part of the regular University organization, with similar standards of academic accomplishment. The courses are of the same character as those offered during the regular academic year. Credit obtained is fully recognized toward the various degrees which the University confers.

PROJECTED REGISTRATION

Students who have regularly registered for 12 units of credit and have demonstrated their ability to do independent work may be permitted to register for a maximum of 3 units of work to be done in absentia. Work thus undertaken must be in the nature of an individual problem and must be completed before the beginning of the next Summer Session. Work done under projected registration will be accepted for residence credit. Graduate credit will be granted under the regulations governing graduate credit in residence.

GRADUATE STUDY AND ADVANCED DEGREES

The University of Arizona Summer Session gives particular attention to graduate study. All courses numbered from 200 to 299 are
definitely organized as graduate courses and carry graduate credit. Courses numbered from 100 to 199 may be taken for graduate credit upon the recommendation of the instructor and the approval of the Graduate Study Committee.

Due to the increasing demand for graduate work during the summer, several of the departments of the University have provided for individual research in their special fields. Such courses are listed under the respective departments. Students who wish to pursue any of these courses must obtain the consent of the respective instructors before registering for the courses.

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.

SPECIAL FEATURES

Field Research—A special feature of the Summer Session is the opportunity offered graduate students to carry on field investigations in connection with research projects already under way in anthropology, plant and animal ecology, plant geography, range ecology, mammalogy, forestry, and plant physiology.

Due to the wide variation in topography and climate available within short distances in Arizona, it will be possible to become familiar with conditions prevailing in all the main floral and faunal divisions from the subtropical desert to the alpine woods.

Similarly, Arizona offers unsurpassed opportunity to study prehistoric life, extending in some cases probably as far back as Pleistocene times. The ruins of cliff dwellings and prehistoric pueblos are scattered over the entire state. They present many interesting phases of human culture and introduce us to the beginnings of American industry.

Registration for any of this work will be only by individual arrangement of properly qualified students with the leader of the line of research which it is desired to pursue. Detailed information concerning these research opportunities may be obtained by addressing the Dean of the Summer Session.

TRADE AND INDUSTRIAL EDUCATION

Under a co-operative arrangement with the State Department of Vocational Education, the University in 1932 inaugurated a program of training for teachers of trades and industries and of mechanic arts. The curtailment of this type of work in the state makes it inadvisable to continue the program on as extensive a plan as was originally intended. Ample opportunity is offered for those who began the work in 1932 to complete their work for the degree in Summer Sessions.

EXPENSES AND FEES

As the University is unable to extend credit, it is essential that all students have sufficient funds on entering to defray their immediate expenses.

Tuition—The tuition required of all students is $25 for either five-week term or $40 for the whole ten-week session.

Laboratory and Material Fees—In certain laboratory and other courses fees are required to cover the cost of materials and of breakage. A statement of the amount of such fees is found in the description of courses.
Dormitories—Rooms in the dormitories may be obtained for $10 per term per person, two in a room. To the extent that they are available, single rooms may be procured for $15 per term. A room deposit of $5 is required of all residents of the dormitories.

Trips—For recreational trips regularly arranged for students of the Summer Session and for trips required in connection with field courses, a fee based on mileage will be charged.

No fees except the room deposit are returnable.

For more detailed information concerning the Summer Session, inquiries should be addressed to the Dean of the Summer Session, University of Arizona, Tucson.
DESCRIPTION OF COURSES OF INSTRUCTION

EXPLANATORY NOTES AND KEY TO ABBREVIATIONS AND SYMBOLS

Description of Courses—Descriptions of all courses offered in the University may be found in the following pages under an alphabetical arrangement of departments listed without respect to college organization.

Classification of Courses—In all colleges except the College of Law the number by which a course is designated is intended to indicate the relative advancement of the course. Courses numbered 1 to 99 inclusive are primarily lower-division courses for Freshmen and Sophomores. Courses numbered 100 to 199 inclusive are primarily upper-division courses for Juniors and Seniors, and the courses numbered 200 and upward are primarily for graduate students. Certain upper-division courses may, however, be carried for graduate credit under arrangements approved by the instructor, by the head of the department, and by the Dean of the Graduate College.

Year Courses; Double Numbers—A course designated by a double number (for example, Economics 1a-1b) is continued through two successive half years. The student will use the first number in registering for the course during the first half year and the second number during the second half year. A final report will be made by the instructor at the end of each half year, with final credit for the first half of the course, except as otherwise noted.

Starred Courses—Courses marked with an asterisk (*) are designated as nonprofessional or nonvocational for students in the College of Liberal Arts (see page 111).

Abbreviations—The credit value of each course in units is indicated for each semester by a numeral in parentheses following the title. A unit is one hour weekly of the student's time at the University, during one half year, in lecture or recitation, together with the time necessary in preparation therefor, or a longer time in laboratory or other exercises not requiring preparation. The session during which the course is given is shown as follows: "I," first half year; "II," second half year; "Yr.," throughout the year. The capitals "R" and "L" designate recitation and laboratory.

Cancellation of Courses—The Faculty reserves the right to cancel any course not elected by an adequate number of students.

Prerequisites—A student registering for a course must meet the prerequisites or otherwise satisfy the instructor of his ability to take that course.
GENERAL INTERDEPARTMENTAL COURSES

Three new courses are now offered covering larger fields of human interests than can be covered in the usual departmental introductory courses. They aim, first, to give authoritative information about the most important contributions and problems in their respective areas and second, to cultivate intelligent interest in the part which these contributions play in our complex civilization.

Introduction to Humanities. (4-4) Yr. Solve, Fowler, Schneck (Committee in Charge)

The cultural life of the Western World as it developed through literature, art, music, and philosophy from the Greeks to the present. Two lectures and two discussion periods. Required of Sophomores in Liberal Arts, Fine Arts, and Home Economics. Fee, $1 first semester.

Physical Sciences. (4-4) Yr. Graesser, Douglass, Warner (Committee in Charge); Mewborn

Fundamentals of astronomy, mathematics, physics, chemistry, geology; their significance in a view of the world and in the social and industrial order. Primarily for students who expect to major in other fields. Two lectures and two discussion periods. Meets science group requirement. Enrollment limited to 150. Fee, $2 each semester.

Social Science Survey. (3) Yr. Wedel, Brown, Harvill (Committee in Charge)

Issues in the social order as seen in the light of its history and of the different social sciences. Primarily for those who do not plan to major in this field. Meets social science group requirement. Enrollment limited to 125. Fee, $1 each semester.

REQUIRED COURSE FOR FRESHMEN WOMEN

Social Fundamentals. (1) I. Dean of Women, Special Lecturers

Required of all Freshmen women. Factors in right living and social adjustment; personal hygiene; nutrition; costume; social usage; the choice of an occupation; personal and ethical problems. Lecture one hour per week; laboratory one hour per week to be arranged.

UNIVERSITY CONCERT AND LECTURE SERIES

In order that students may not only be provided with ample facilities for study under competent instructors but may have the opportunity of hearing the best in music, drama, and lectures, the University sponsors the University Series. Upon the completion of registration, all students who are registered for 6 or more units of credit in the University are presented with a season ticket to the course.
AGRICULTURAL AND HOME ECONOMICS EDUCATION

Professor Klemmedson (Head of the Department).
Associate Professor Jones.

AGRICULTURAL EDUCATION

198. Teaching of Farm Mechanics. (2) II. Klemmedson
Special methods in teaching farm mechanics. Prerequisite, Education 134.
One lecture and one three-hour laboratory period. Laboratory fee, $3. Not for graduate credit.

199a. Apprentice Teaching of Vocational Agriculture. (3) II. Klemmedson
A practical application under classroom and field conditions of the principles of agricultural education. Required of all prospective vocational agriculture teachers. Prerequisites, Education 134, 151, 197a, and a satisfactory attainment in subject matter. Field trip fee, $7. Not for graduate credit.

202. Advanced Agricultural Education. (2) II.
For teachers having one or more years of teaching experience. Usually conducted by visiting professor.

203. Methods in Part-Time and Evening Class Instruction. (2) II. Klemmedson
Open to experienced teachers or graduates. The objective is to develop ability to promote and conduct part-time and evening classes in vocational agriculture.

204. Supervision and Administration of Vocational Agriculture. (2) II. Klemmedson
Open to experienced teachers and graduates. Designed to meet the needs of local supervisors, directors, and administrators.

The Teaching of Agriculture. (4) II. Klemmedson
For description see Education 197a.

HOME ECONOMICS EDUCATION

198. Problems in Teaching Home Economics. (2) II. Jones
Laboratory management, housing and equipping the home economics department, administrative and curriculum problems, and an evaluation of current home economics literature. Prerequisite, Education 197g. Not for graduate credit.

199b. Apprentice Teaching in Vocational Home Economics. (3 to 5) I or II. Jones
Observations, assisting, supervision of home projects, and supervised teaching in grade- or high-school classes in home economics. Conference hours to be arranged. Prerequisites, Education 197g or concurrent registration and satisfactory subject matter attainment. Not for graduate credit.

210. Seminar in Home Economics Education. (2) II. Jones
Recent investigations in Home Economics Education. Readings and individual or group problems. Primarily for experienced teachers or graduate students.

The Teaching of Home Economics. (3) I. Jones
For description see Education 197g.
AGRICULTURAL CHEMISTRY AND SOILS

Professors Buehrer (Head of the Department), Burgess.
Associate Professor H. V. Smith.
Assistant Professor Greene.

101. Soil Physics. (4) I. Smith
The formation, classification, and physical properties of soils. Three lectures and one three-hour laboratory period. Prerequisites, Chemistry 1b or 2b or equivalent and Physics 17a or concurrent registration therein. Laboratory fee, $2.50; field-trip fee, $2.

111. Soil Chemistry. (4) II. Buehrer
A study of the chemical factors which determine soil fertility. Prerequisites, Chemistry 40 and Agricultural Chemistry 101. Three lectures and one three-hour laboratory period. Laboratory fee, $3.

121. Soil Microbiology. (4) I. Greene
The occurrence and physiological activities of soil microorganisms. Prerequisites, Chemistry 54 or Agricultural Chemistry 111 and Bacteriology 107. Two lectures and two three-hour laboratory periods. Laboratory fee, $3.

131. Applied Colloid Chemistry. (2) II. Buehrer
The principles of colloid chemistry as applied to soils and related fields. Two lectures. Prerequisites, Chemistry 40 or Agricultural Chemistry 111 and Physics 17a. Offered in 1938-39 and alternate years.

141. Soil Classification and Land Utilization. (2) II. Smith
The surveying, mapping, and classification of soils, as a basis of determining the probable agricultural value of lands. Two periods a week. A three-hour laboratory period may occasionally be substituted for a one-hour lecture period. Prerequisite, 111. Field trip fee, $2. Offered in 1938-39 and alternate years.

151. Agricultural Chemical Analysis. (4) II. Buehrer
The analysis of materials of agricultural importance. Prerequisite, Chemistry 54 or 101. Two lectures and two three-hour laboratory periods per week. Laboratory fee, $3.

161. Soil Conservation. (2) I. Smith
Physical and chemical factors affecting soil erosion. Soil conservation practices conducive to a permanent agriculture. Two lectures per week. Prerequisites, 101 and 111.

201. Seminar in Soil Science. (1) II. Staff
Presentation of papers on current investigations in soil science and related fields. Open for credit to properly qualified Senior and graduate students.

206. The Physical Chemistry of Soils. (3) I. Buehrer
Application of the methods of physical chemistry to such soil problems as base exchange, pH, oxidation-reduction potentials, and the soil solution. Three lectures per week. Prerequisites, Agricultural Chemistry 111 and Chemistry 106a-106b or its equivalent. Offered in 1937-39 and alternate years.

211. Research in Agricultural Chemistry and Soils. (2 to 4) I or II. Staff
The chemical laboratories and facilities of the Agricultural Experiment Station are open both semesters and during the summer to competent students for research.

AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY

Professors Barr (Head of the Department), Tetreau.

101. Agricultural Economics. (3) II. Barr
on trends in the production and prices of southwestern agricultural products. Prerequisite, Economics 1a. Offered in 1938-39 and alternate years.
102. Rural Sociology. (3) II. Tetreau
Rural population, its distribution, characteristics; institutions and agencies concerned with government, public education, religion, welfare, rural merchandising, and agricultural co-operation. Offered in 1938-39 and alternate years.

103. Marketing Farm and Ranch Products. (3) II. Barr
Services and costs in distributing agricultural products from farmers to consumers; principles of organization and operation of farmers' co-operative associations. Offered in 1937-38 and alternate years.

104. Agrarian Movements. (3) I. Tetreau
Social and economic analysis of agrarian movements with attention to the principal farmers' and ranchers' organizations that were their outgrowth. Survey of recent governmental programs for agriculture. Offered in 1937-38 and alternate years.

105. Farm Management. (3) IL Klemmedson
Organization and management of farms with reference to financial returns. Field trip fee, $5. Not for graduate credit.

206. Seminar in Rural Sociology. (1 or 2) I or II. Tetreau
Research problems concerning population; groups and institutions of farm, ranch, and village life in the Southwest.

AGRICULTURAL ENGINEERING

Professors G. E. P. Smith (Head of the Department), Schwalen.
Assistant Professor Steenbergen.*

1. Agricultural Shop Practice. (2) II. Klemmedson-Steenbergen
Carpentry, forging, leather work, and metal soldering. Two three-hour laboratory periods. Laboratory fee, $3.

101. Farm Machinery and Mechanics. (3) I. Klemmedson
Operation, adjustment, care and repair of farm machinery, including tractors. Prerequisite, I, except for those who have had agricultural shop practice in high school. One lecture and two three-hour laboratory periods. Laboratory fee, $3. Not for graduate credit.

105. Irrigation Practice. (4) II. Schwalen
Farm surveying; preparation of fields; methods of irrigation; use and waste of water; efficiency of irrigation; duty of water. Prerequisite, Mathematics 70a or equivalent. Two recitations and two three-hour laboratory periods. Laboratory fee, $1; field trip fee, $2. Not for graduate credit.

106. Ground-Water Supplies and Pumping for Irrigation. (2) II. Steenbergen
The occurrence, source, movements, measurements, and safe yield of ground water; well drilling and development; pumping machinery. Prerequisite, Mathematics 70a or equivalent. One recitation and one three-hour laboratory period. Open to Juniors and Seniors. Field trip fee, $2. Not for graduate credit.

107. Irrigation Systems. (2) II. Smith
Water supply and storage; conveyance and distribution works; irrigation economics; organization of districts. Prerequisite, 105. One lecture and one three-hour laboratory period.

110. Land Drainage. (2) I. Schwalen
Principles of land drainage, drainage on irrigation projects; gravity systems; draining by pumping; effects and economy of canal lining. Prerequisite, 105. Two lectures. Field trip fee, $5. Not for graduate credit.

201. Research and Thesis in Water Supply and Irrigation. (2 to 4) I or II. Smith
Prerequisites, 105 and 106.

* On leave 1937-38.
AGRONOMY

Professor Hawkins (Head of the Department).
Associate Professors Briggs, Matlock.

1. Principles of Agronomy. (2) I. Briggs
   The fundamental factors in the production and management of field crops. Prerequisite to all other courses in agronomy. One lecture and one three-hour laboratory period. Laboratory fee, $2.

101. Forage Crops. (3) I. Briggs
   The principal forage crops of the United States, including legumes, corn, sorghums, and grasses, with particular reference to the Southwest. Prerequisite, Botany 1. Two lectures and one three-hour laboratory period. Laboratory fee, $1.

102. Cereal Crops. (3) II. Matlock
   Botanical, agronomic, and economic factors influencing production practices in important cereal regions and in Arizona. Prerequisite, Botany 1. Two lectures and one three-hour laboratory period. Laboratory fee, $1.

103. Cotton Production. (3) I. Hawkins
   Soil, climatic, and cultural factors involved in the production of cotton with particular reference to the irrigated lands of the Southwest. Prerequisite, Botany 1. Offered in 1937-38 and alternate years.

104. Alfalfa Production. (3) II. Briggs
   Production and marketing of alfalfa with particular reference to the varieties and methods adapted to the irrigated conditions of the Southwest. Prerequisite, Botany 1. Two lectures and one three-hour laboratory period. Laboratory fee, $2.

106. Crops Judging. (1) I. Matlock
   The factors involved in determining quality in seeds. Practice and competitive judging of seeds, grain, and sheaf samples. Prerequisite, Botany 1. One three-hour laboratory period. Laboratory fee, $2. Not for graduate credit.

108. Crop Problems. (2) II. Hawkins
   Structural and physiological aspects of crop plants as related to field practices. Prerequisites, Botany 1 and 103. Two lectures. Offered in 1938-39 and alternate years.

201. Seminar in Agronomy. (1) II. Staff
   Special problems relating to field crop production. Conferences and discussions.

202. Research and Thesis in Agronomy. (2 to 4) I or II. Staff
   The laboratory and facilities in agronomy are open throughout the year to competent persons for research and special investigation.

ANIMAL HUSBANDRY

Professors Stanley (Head of the Department), Scott.
Associate Professor Pistor.

1. Principles of Animal Husbandry. (2) II. Stanley
   The fundamental principles underlying livestock management and production; score card and judging practice. One lecture and one laboratory period. Prerequisite to all courses in animal husbandry. Laboratory fee, $1.50.

2. Livestock Production. (3) I. Stanley
   The practical problems arising in the production, care, and management of farm livestock. Two lectures and one laboratory period. Laboratory fee, $2.

101. Advanced Livestock Judging. (3) I. Scott
   A detailed study in judging the various breeds of livestock. Trips are made to ranches, stock farms, and livestock expositions. One lecture, two three-hour demonstrations. Field trip fee, $7. Not for graduate credit.
102. Range Livestock Production. (3) I. 
Stanley
Ranch organization and methods of management; land use, production costs and problems of the range livestock industry in the Southwest. Three lectures. Offered in 1938-39 and alternate years.

103. The Breeds of Livestock. (2) I. 
Scott
Characteristics of the breeds of farm animals; origin, history, and development; adaptability to the Southwest; pedigree studies. Two lectures. Offered in 1938-39 and alternate years. Not for graduate credit.

Scott
The chemistry and physiology of digestion, assimilation, and metabolism; functions of nutrients; feed requirements of domestic livestock; composition and digestibility of feedstuffs; feeding standards and balanced rations. Prerequisite, Chemistry 40 or 103a. Three lectures.

105. Animal Diseases. (3) I. 
Pistor
Animal hygiene and prevention of disease; errors in feeding and in care of animals; simple operations. Three lectures. Prerequisite, Bacteriology 107. Not for graduate credit.

106. Wool and Mohair. (3) II. 
Scott
Measurement, physical structure, and chemical composition of wool fibres; sorting, grading, and scouring; manufacture of textiles. One lecture and two three-hour laboratory periods. Laboratory fee, $3. Prerequisite, Chemistry 1b.

113. Animal Breeding. (3) II. 
Scott
The practical application of the principles of genetics to methods of animal breeding. Prerequisite, Botany 108 or concurrent registration for upperclassmen. Three lectures. Offered in 1938-39 and alternate years.

114. Feeding Livestock. (3) II. 
Stanley
Selection and use of feeds for special purposes; balanced rations; methods of feeding and experimental work in feeding livestock. Three lectures. Prerequisite, Chemistry 1b. Not for graduate credit.

115. Marketing Livestock and Livestock Products. (3) I. 
Stanley-Scott
Systems of marketing livestock; slaughtering livestock; the packing industry; distribution of meat and other livestock products. Three lectures. Prerequisites, Animal Husbandry 2 and Economics 1a.

116. Animal Anatomy and Physiology. (4) II. 
Pistor
Gross and comparative anatomy and physiological processes of domestic animals. Required of all animal industry students. Three lectures and one laboratory period. Laboratory fee, $4.

202a-202b. Seminar in Animal Husbandry. (2-2) Yr. 
Stanley-Scott

212. Research in Animal Husbandry. (2 to 4) I or II. 
Stanley-Scott
The satisfactory completion of a research problem in animal husbandry.

ANTHROPOLOGY

Associate Professor Haury (Head of the Department).
Assistant Professors Provinse,* Tanner.
Instructors Getty, Gabel.

The major: 24 units exclusive of 1a-1b and inclusive of 100, 109a-109b, and 120a-120b. Recommended, 115.

The supporting minor should be chosen from: physiology, anatomy, and zoology for those interested chiefly in physical anthropology; geology, paleontology, and history for those interested in archaeology; history, language, and social sciences for those interested in ethnology and

* On leave 1937-38.
ethnography; and economics, psychology, sociology, religion, and language for those concerned with social anthropology.

A field course in archaeology has been offered each summer. See Summer School Announcement.

Social Science Survey. (3-3) Yr. 

Wedel, Harvill, Brown

General interdepartmental course, see page 148.

1a-1b. Anthropology. (3-3) Yr. 

Haury-Tanner

A survey, designed to give the student a general knowledge of the field of anthropology.

1a: The organic nature of man, his origin, physical characters and race differences, and a preview of world archaeology.

1b: Living groups, their distribution, arts, sociology, religion, and language. Not open to Freshmen. 1a is prerequisite to 1b.

100. Old World Archaeology. (3) I. 

Tanner

The history of civilization in Europe through the Eolithc, Paleolithc, Epipaleolithc, Neolithc, Bronze, and Iron ages. Prerequisite, 1a-1b.

103. Greece. (3) I. 

Tanner

Principal monuments and ruined cities of the Greek world illustrating the development of Greek culture. Prerequisite, course in ancient history.

104. Rome. (3) II. 

Tanner

Principal cities and monuments of the ancient Romans illustrating their early development. Prerequisite, course in ancient history.

107. Asia. (2) I. 

Tanner

Ruins of the chief ancient cities of western Asia, tracing their influence upon civilization.

108. Egypt. (2) II. 

Tanner

Prehistory of Egypt and the development of its mighty empire as revealed by archaeological investigations.

109a-109b. Races and Cultures of North and South America. (3-3) Yr. 

Gabel

The archaeology and ethnography of the Americas, exclusive of Mexico and Central America. Human history in the various culture areas from the earliest manifestations to historic times. Prerequisite, 1a-1b.

110a-110b. Archaeology of Mexico and Central America. (2-2) Yr. 

Gabel

Achievements, chronologies, and interrelations of peoples in these areas. Prerequisites, 1a-1b and 115a-115b.

115a-115b. Archaeology of the Southwest. (3-3) Yr. 

Getty

A detailed study of the pre-Spanish culture groups of the Southwest with special emphasis on chronology. Prerequisites, 1a-1b and 109a-109b. It is recommended that 130 be taken concurrently. Fee, $3 each semester.

120a-120b. Ethnology. (3-3) Yr. 

Getty

120a: The people and cultures of the world exclusive of North America.

120b: North American ethnology. Prerequisite, 1a-1b.

130. Ethnology of the Southwest. (3) II. 

Getty

This course considers the living Indians of the Southwest in the realms of their culture history, economic and social institutions, religion, and mythology. Prerequisites, 1a-1b and 115a-115b. May be taken concurrently with 115a-115b. Fee, $3 each semester.

104a-104b. Physical Anthropology. (3-3) Yr. 

Gabel

The human and anthropoid skeletons, racial differences, anthropometric methods. Especially for students who expect to do professional work in anthropology. Prerequisites, 1a-1b and 120a-120b.

203a-203b. Primitive Society. (2-2) Yr. 

Provinse

Social, political, and economic institutions of primitive people. Prerequisites, 109a-109b and 120a-120b. Recommended, Sociology 81. Offered in 1938-39 and alternate years.
204. **Primitive Arts and Industries. (3) II.**

A technical study of the material culture of primitive man including textiles, ceramics, etc. Especially for students who expect to do professional work in archaeology and ethnology. Prerequisites, 109a-109b, 115a-115b, and 120a-120b. Offered in 1938-39 and alternate years.

205a-205b. **Methods in Anthropology. (3-3) Yr. Provinse-Haury**

Prerequisites, 115a-115b and 120a-120b. Not offered in 1937-38.

205a: Its history and schools of thought.

205b: Field and laboratory methods.

211. **Dendrochronology. (2) I. Getty**

Tree rings and their use in prehistoric dating and in problems of climatic cycles. One one-hour lecture covers relations to archaeology, astronomy, geology, and meteorology. Laboratory includes actual reading of ring sequences.

212. **Research. (1 to 3) I or II. Staff**

Problems in southwestern anthropology and dendrochronology.

215a-215b. **Seminar in American Archaeology. (3-3) Yr. Haury**

Problems in southwestern archaeology. Primarily for graduates. Prerequisites, 109a-109b, 110a-110b, and 115a-115b. Fee, $3 each semester.

**ART**

Associate Professor Kitt (Head of the Department).
Instructors Scott, Andersen.

The major: 24 units above 1a-1b, including 2a-2b, 7a-7b, 101a-101b or 105a-105b, 102a-102b, 103a-103b or 112a-112b.

The supporting major should be chosen from: history, psychology, anthropology, foreign language, music, dramatic art, English, engineering, speech, or rhythmics.

The minor in art in the College of Liberal Arts and the College of Education shall include 1a-1b, 2a-2b, 7a-7b, 105a-105b.

1a-1b. **Art and Design. (2-2) Yr. Staff**

Fundamental principles underlying all art. Practical training in water color. Two three-hour periods. Laboratory fee, $1 each semester.

2a-2b. **Drawing. (2-2) Yr. Scott**

Beginning drawing from casts and still life; charcoal and pencil techniques. Two three-hour periods. Laboratory fee, $1 each semester.

7a-7b. **History and Appreciation of Art. (3-3) Yr. Kitt**

The great art movements of the past, their influences and effects, with the study of the great leaders up to the time of the Italian Renaissance. Three one-hour lectures.

9. **Perspective. (3) I. Andersen**

Linear and tonal perspective as applicable to various phases of artistic expression.

10. **Anatomy. (3) II. Scott**

Anatomy for artists as a complete survey of the bones and muscles. Fee, $1.

101a-101b. **History of Modern Art. (3-3) Yr. Andersen**

Analytical study of the modern schools of art and their origins and influences. Three one-hour lectures.

102a-102b. **Still Life and Landscape in Color. (2-2) Yr. Kitt**

Beginning work in oil painting including still life and landscape. Two three-hour periods. Not for graduate credit.

103a-103b. **Life Drawing. (2-2) Yr. Kitt**

The study of the human figure from model, with emphasis upon anatomy and memory work. Prerequisite, 2a-2b. Two three-hour periods. Fee, $6 each semester. Not for graduate credit.
104a-104b. Advanced Painting. (2-2) Yr.  
Study from costume model with emphasis upon technique and composition. 
Prerequisite, 102a-102b or its equivalent. Two three-hour periods. Fee, $6 each semester. Not for graduate credit.

105a-105b. Art of the Renaissance. (3-3) Yr.  
A study of the art of the Italian Renaissance and its effect upon other countries. Three one-hour lectures.

106. Watercolor. (2) II.  
Various techniques and their application to figures and landscapes. 
Prerequisites, 1a-1b and 9. Fee, $1.

112a-112b. Illustration. (2-2) Yr.  
Study of the various media and their application to illustration and advertising design. Lettering and layout. 
Prerequisites, 1a-1b, 2a-2b, 9, 10, 103a-103b, or equivalent with the consent of the instructor. Two three-hour periods. Not for graduate credit.

201a-201b. Seminar. (2-2) Yr.  
Research in design, emphasizing the native designs of the Southwest and their application to present needs. 
For Seniors and graduate students. Two one-hour lecture periods to be arranged.

Teaching of Art. (3) I.  
For description see Education 1971.

Related Courses:  
Home Economics 45, 64, 125; Anthropology 103, 104, 107, and 108.

ASTRONOMY

Professors Carpenter (Head of the Department), Douglass.  
Assistant Professor Roach.

The major: 24 units including Astronomy 1a-1b, 2a-2b, 101; Mathematics 100a-100b; Physics 106a-106b.

Mathematics and physics should be begun during the Freshman and Sophomore years.

The supporting minor should be chosen from: physics, mathematics.

Note: In any year there will be given courses 102 and 103, or course 105, or course 204a-204b. Students interested should consult the department as early as possible.

1a-1b. Descriptive Astronomy. (2-2) Yr.  
A nonmathematical course: 1a, the solar system; 1b, the stars, nebulae, and "island universes." Open to all students. With the consent of the instructor 1b may be taken without 1a. See description under 2a-2b. Two lectures and one one-hour observing period.

2a-2b. Astronomical Laboratory. (2-2) Yr.  
Supplement to 1a-1b, best taken concurrently. One lecture and one three-hour laboratory period. Observations with the telescope and other types of astronomical instruments. Courses 1a-1b and 2a-2b when taken simultaneously fulfill the science requirement. Fee, $1.

101. Engineering Astronomy. (2) I.  
Latitude, longitude, meridian, and time observations and their reduction, in theory and in practice. 
Prerequisite, Plane Trigonometry. This course is required of Juniors in civil engineering not electing Geology 1aR. Fee, $1. Not for graduate credit.

102. The Method of Least Squares and the Theory of Interpolation. (3) I.  
Errors of observation and their propagation; reduction of observations by the method of least squares; the theory of interpolation and its application to the use and construction of extensive tables. 
Prerequisite, Mathematics 100b. Not offered in 1937-38 (see note above).
103. Spherical Astronomy. (3) II. Carpenter

The mathematical theory of precession, nutation, and related subjects; reduction of star places; measurement of astronomical photographs. Prerequisites, 1a-1b or its equivalent and Mathematics 100a. Not offered in 1937-38 (see note above).

105. Introduction to Celestial Mechanics. (2) II. Carpenter

Special reference to the problem of two bodies in the solar system. Prerequisite, Mathematics 100b (see note above). Offered in 1937-38.

121a, b. Special Study. (1 to 3) I or II. Carpenter-Roach

Selected topics not extensively covered in courses announced. Prerequisite, an adequate knowledge of physics and mathematics for the topic chosen. By permission the course may be repeated for credit.

204a-204b. Astrophysics. (3-3) Yr. Carpenter

Solar and stellar physics, the application of radiation theory to astronomical problems, stellar motions and distribution, clusters and nebulae. Prerequisites, Astronomy 1a-1b, Integral Calculus, Geometrical and Physical Optics. Not offered in 1937-38 (see note above).

212. Research. I or II. Staff

Photographic and photoelectric photometry and related problems. Units of credit will depend upon the work accomplished.

Astronomy Honors. (2-2) Yr.

For particulars see page 114.

Related Courses:

Anthropology 211, 212.

**BACTERIOLOGY**

Associate Professor M. E. Caldwell (Head of the Department).
Assistant Professor Greene.
Instructor Laffer.

The major: 24 units including Bacteriology 107, 137, 157, 167, Zoology 144, 146, and Chemistry 103b.

The supporting minor should be chosen from: botany, chemistry, agricultural chemistry, or zoology.

67. Personal Hygiene. (2) II. M. E. Caldwell

The more important problems of the preservation and promotion of individual health. Prerequisite, Zoology 4 or equivalent. Not open to Freshmen.

107. General Bacteriology. (4) I. M. E. Caldwell-Greene-Laffer

Fundamental facts of bacteriology. Characteristics of important groups of microorganisms studied in laboratory. Prerequisite, Chemistry 1b or 2b; recommended, Zoology 4 and Botany 1. Two lectures and two three-hour laboratory periods. Fee, $10.

109. Dairy Bacteriology.

See Department of Dairy Husbandry.

121. Soil Microbiology.

See Department of Agricultural Chemistry and Soils.

137. Public Hygiene. (2) I. M. E. Caldwell

Community hygiene problems: water and food supplies, sewage disposal, infant and maternal welfare, tuberculosis, insect-borne diseases, etc. Prerequisite, Zoology 4 or Bacteriology 107.

157. Pathogenic Bacteriology. (4) II. M. E. Caldwell

Characteristics of pathogenic bacteria, principles of infection and immunity, laboratory studies of pure cultures and pathological material. Prerequisites, Zoology 4, 8 or 45, 144 or Animal Husbandry 116, and Bacteriology 107. Two lectures and two three-hour laboratory periods. Fee, $10.
167. Physiology of the Bacteria. (2) II. Greene
The influence of physical and chemical environment upon microorganisms. Open to Seniors and graduate students by consent of instructor. Prerequisites, Bacteriology 107 and Agricultural Chemistry 121 or Bacteriology 157. Two lectures.

177. Public Health Laboratory Methods. (3) II. Laffer
Bacteriological examination of water, milk, and other foods; disinfectant testing. Emphasis on standard methods. Prerequisites, 107 and consent of the instructor. One lecture and two three-hour laboratory periods. Fee, $10.

190a-190b. Elementary Bacteriological Problems. (2 to 4-2 to 4) Yr. Staff
Special individual investigations for a limited number of students who wish to prepare for research or to obtain special training. Approval of instructor and Head of Department. Credit in accordance with work accomplished. Fee, $2 per unit.

207a-207b. Special Discussions. (1-1) Yr. Staff
For Seniors or students registered for Bacteriology 190a-190b. Required of students registered for Bacteriology 227a-227b.

227a-227b. Research. (2 to 4-2 to 4) Yr. Staff
Special investigations. Credit in accordance with work accomplished. Fee, $2 per unit.

Bacteriology Honors. (2-2) Yr. Staff
For particulars see page 114.

BOTANY

Professors Crooks (Head of the Department), Thornber. Assistant Professors Nichol,* Pultz. Instructors Arnold, Darrow.

The major: 24 units in addition to Botany 1 and including Botany 2, 4, 6, 103, and Plant Breeding 108. Also see major groupings, page 73. The supporting minor should be chosen in consultation with the Head of the Department from not more than three subjects in the following: agronomy, chemistry, economic zoology, geology, horticulture, mathematics, physics, and bacteriology. At least 8 units from one subject. The teaching minor must include Botany 1, 4, and at least 8 additional units elected from Botany 2, 6, 103, 122, 132 or 142. The candidates for higher degrees will be expected to pass a comprehensive examination covering Botany 1, 2, 4, 6, 103, and Plant Breeding 108.

1. General Botany. (4) II. Crooks and Staff
Elements of botany, with emphasis on the structure, function, development, and heredity of the plant; a survey and classification of the plant kingdom. Prerequisite to all other courses in this department. Two lectures and two three-hour laboratory periods. Fee, $5.

2. General Plant Anatomy. (4) I. Crooks
Origin, development, and maturation of the structures of the vascular plants. Prerequisite, 1. Two lectures and two three-hour laboratory periods. Fee, $5.

4. Taxonomy and Local Flora. (4) II. Thornber
Identification of native and cultivated species. Use of the manual. Characteristics of the more important families. Prerequisite, 1. Two lectures and two three-hour laboratory periods. Fee, $5.

6. General Ecology. (4) I. Darrow
Plants in relation to their environment, plant communities, and factors affecting the distribution of plants. Prerequisites, 1 and 4. Two lectures and two three-hour laboratory periods. Fee, $5.

* On leave of absence 1937-38.
103. Elementary Plant Physiology. (4) II. Pultz
A summary study of plant functions: absorption, nutrition, respiration, and reproduction. Prerequisites, Botany 1 and Chemistry 1b or 2b. Two lectures and two three-hour laboratory periods. Fee, $5; breakage deposit, $2. Not for graduate credit.

116. Ecology of the Range and Forest. (4) II. Darrow
The ecology of important forage plants, range weeds, poisonous plants, and forage production. Consideration will be given to the preservation and utilization of range and forest. Prerequisite, 6. Two lectures and two three-hour laboratory periods. Fee, $5.

122. Morphology of Thallophytes and Bryophytes. (3) I. Crooks
Critical studies in the morphology and group relationships of the representative members of these groups. One lecture and two three-hour laboratory periods. Prerequisite, 1. Fee, $5.

123. Advanced Physiology. (4) II. Pultz
Problems in plant physiology, including water relations, photosynthesis, respiration, enzymes, and growth. Prerequisite, 103. Two lectures and two three-hour laboratory periods. Fee, $5; breakage deposit, $2.

124. Advanced Taxonomy. (4) I. Thornber
Systematic study of Arizona flora with emphasis on important groups. Phylogenetic problems. Prerequisite, 4. Two lectures and two three-hour laboratory periods. Fee, $5.

132. Morphology of Pteridophytes and Spermatophytes. (3) II. Crooks
Critical studies in the morphology and group relationships of the representative members of these groups. Prerequisite, 2. One lecture and two three-hour laboratory periods. Fee, $5.

136. Range and Forest Game Management. (2) II. Nichol
Management of large game animals on range and forest lands in the western states, with special reference to the problems of co-operative use of range lands by domestic stock and game. Prerequisites, Botany 1, Zoology 4, and 3 additional units in either biology or animal husbandry. One lecture per week and one all-day field trip on alternate weeks. Fee, $3. Not offered in 1937-38.

142. Methods in Plant Histology. (3) I. Crooks
Principles and methods of killing, fixing, imbedding, sectioning, staining, mounting, and analyzing plant materials. Prerequisite, 2. Three three-hour laboratory periods. There will be some discussion during laboratory periods. Fee, $5.

222. Structure of Economic Plants. (3) II. Crooks
Anatomical studies dealing with representative commercially important field and garden plants. Prerequisite, 2. Three three-hour laboratory periods. There will be some discussion during laboratory periods. Fee, $5. Offered in 1937-38 and alternate years.

223. Plant Nutrition. (3) II. Pultz
Consideration of inorganic and organic nutrition of plants, with special emphasis on the influence of environmental conditions upon nutritional metabolism. Two lectures and one three-hour laboratory period. Prerequisite, 103. Fee, $5; breakage deposit, $2.

234. Classification of Desert Plants. (4) I or II. Thornber
Special groups of desert plants. Prerequisite, 124. Fee, $5.

236. Vegetation and Environment. (2) I. Darrow
Plant communities, their classification, history, and recognition. Methods of determining the factors of the habitat. Prerequisites, 6 and 103. One lecture and one three-hour laboratory period. Fee, $2.

246. Plant Geography of the World. (2) II. Darrow
Correlation of the major plant communities of the world with climatic conditions, soil conditions, and crop potentialities. Ecological and floristic aspects will be considered. Prerequisites, 4 and 6. Two lectures.
280. Advanced Studies. (1 to 4) I or II. Staff
In consultation with the Head of the Department and the instructor concerned. Special work in any field of botany. The field should be designated in registering as: 280E, ecology; 280M, morphology; 280P, plant physiology; and 280T, taxonomy. Fee, $1 per unit.

290. Research. (2 to 4) I or II. Staff
Students registering for research should also register in Botany 291 (in the same field of work). Work is offered in the following fields: 290E, ecology; 290M, morphology; 290P, physiology; 290T, taxonomy. Fee, $1 per unit. Work may be arranged with co-operative research agencies.

291. Special Discussions. (1) I or II. Crooks
Required of students registered in Botany 290 in the same field of work.

The Teaching of Botany. (3) II. Crooks
For description see Education 197b.

Related Courses:
- Plant Pathology 105, 135, 145, 155, 165, 175, 225, 276.

CHEMISTRY

Professors Anderson (Head of the Department), Roberts.
Associate Professors Sands, Nugent.
Instructor Krznarich.

The major: 3, 4, 101, 103a-103b, 106a, and either 107a or 106b.
The teaching minor must include: Chemistry 1a-1b or 2a-2b, 3, and 6 additional units.

Note: A breakage deposit of $2.50 is required in all laboratory courses except 3, 4, 54, and 101, where the deposit is $5 (see page 54).

1a-1b. General Chemistry. (4-4) Yr. Roberts and Assistants
Fundamental principles of chemistry. Properties of elements and compounds. Prerequisite, high-school chemistry. Three lectures and one three-hour laboratory period. Fee, $5 each semester.

2a-2b. Introductory General Chemistry. (4-4) Yr. Anderson and Assistants
Similar to 1a-1b, but for students without credit in high-school chemistry. Three lectures and one three-hour laboratory period. Fee, $5 each semester.

3. Qualitative Analysis. (4) I. Sands
Laws of equilibrium and solutions. Separation and identification of common metals and acids. One lecture and three three-hour laboratory periods. Prerequisite, 1b or 2b. Fee, $6.

4. Gravimetric Analysis. (4) II. Nugent
General qualitative chemical analysis. The theory and practice of gravimetric methods. Prerequisite, 3. One lecture and three three-hour laboratory periods. Laboratory fee, $6.

40. Organic Chemistry for Students in Agriculture and Home Economics. (4) I. Sands
Aliphatic compounds essential to an understanding of nutrition. Carbohydrates, fats, and proteins included. Three lectures and one three-hour laboratory period. Prerequisite, 2a. Fee, $6.

52. Applied Chemistry for Home Economics Students. (3) II. Sands
The time is divided between elementary biochemistry and textile chemistry. Prerequisite, 40. Two lectures and one three-hour laboratory period. Fee, $5.

54. Elementary Quantitative Analysis. (3) II. Nugent
The elementary principles of quantitative chemical analysis illustrated by means of typical gravimetric and volumetric procedures. Prerequisite, 1b or 2b. One lecture and two three-hour laboratory periods. Fee, $5.
101. Volumetric Analysis. (3) I.  
Nugent
The theory and practice of volumetric methods of quantitative chemical analysis. Prerequisite, 4. Fee, $5.

103a-103b. General Organic Chemistry. (4-4) Yr.  
Anderson
The general principles and theories of organic chemistry, accompanied by the laboratory preparation and examination of organic compounds. Prerequisite, 1b or 2b. It is advisable that students take Chemistry 3 and 4 before 103a. Three lectures and one three-hour laboratory period. Fee, $6 each semester.

105. Industrial Chemistry. (3) I.  
Nugent
A survey; an introduction to chemical engineering and chemical economics. Prerequisites, 101, 103a, and 106a; 106a may be taken concurrently. Three lectures.

106a-106b. Physical Chemistry Lectures. (3-3) Yr.  
Roberts
Fundamental principles of physical chemistry. Emphasis on solution of problems. Prerequisites, Chemistry 4, Physics 1b or 17b, and concurrent registration in Chemistry 101; or 16 units of physics.

107a-107b. Physical Chemistry Laboratory. (3-3) Yr.  
Roberts
Designed to illustrate the principles in 106a-106b. Prerequisite, credit for or registration in 106a-106b. Two three-hour laboratory periods and one one-hour discussion period. Fee, $5 each semester.

109. Advanced Quantitative Analysis. (2) I or II.  
Nugent
A laboratory conference course giving practical experience in (1) water analysis; (2) fuel, oil, and gas analysis; (3) steel and alloy analysis; (4) ore and rock analysis; (5) analysis of copper metallurgical products; (6) special physicochemical methods of analysis; (7) ultimate organic analysis. Prerequisites, 4 and 101. May be taken more than once for credit with change of subject matter. Two three-hour laboratory periods. Laboratory fee, $5.

111. Advanced Inorganic Chemistry. (3) II.  
Nugent
Selected topics. Prerequisite, 4 or 54. Three lectures.

115. Biochemistry. (4) II.  
Sands
Carbohydrates, fats, proteins, digestion, metabolism and excretion. Blood and urine analysis. Prerequisites, 54 and 103a. Two lectures and two three-hour laboratory periods. Fee, $6.

120. Colloid Chemistry. (2) I.  
Nugent
The nature, importance, and the theoretical treatment of the subject. The classification, preparation, and properties of colloidal systems. Prerequisites, 3 or 50 and 54. Two lectures.

202a-202b. Advanced Organic Chemistry. (3-3) Yr.  
Anderson
Carbohydrates, organic nitrogen compounds, stereochemistry, and recent theories of organic chemistry. Prerequisite, 103b. Three lectures.

203. Advanced Organic Preparations. (2) I.  
Anderson
A laboratory conference course preparatory to research. Prerequisite, 103b. Two three-hour laboratory periods. Fee, $8.

205a-205b. Advanced Physical Chemistry Lectures. (3-3) Yr.  
Roberts
205a. Chemical thermodynamics, elementary quantum theory, and chemical kinetics. Prerequisites, Chemistry 106b and Mathematics 100b.
205b: Electrochemistry. Heterogeneous equilibrium. Prerequisite, 205a.

212a-212b. Research. Yr.  
Staff
Directed investigations in inorganic, organic, physical, and biochemistry. Units of credit depend upon amount of work done. Fee, $1 per unit.

215a-215b. Seminar. (1-1) Yr.  
Staff
Discussion of recent contributions to chemical literature. For Seniors and graduate students.

Chemistry Honors. (2-2) Yr.
For particulars see page 114.
CIVIL ENGINEERING

Professors Kelton (Head of the Department), Borgquist. Associate Professor Park.

1. Elementary Surveying. (3 to 4) I or II. Park
   Use, care, and adjustment of surveying instruments; computations; areas; mapping; deeds; determination of meridian. Prerequisites, Mathematics 24 and Mechanic Arts 1. Fee, $1 per unit.

2. Topographical and Mine Surveying. (3) II. Park
   Transit-stadia method; mapping; introduction to plane table; solar observations, patent surveys, underground surveying. Prerequisite, 1. A field trip is made during the last four days of the Easter vacation. Fee, $5.

25. Materials of Construction. (2) I. Borgquist
   The fundamental properties of materials used by the engineer: stone, brick, and timber; cements, iron, and steel; also standard tests for such materials. Prerequisite, Sophomore standing.

103. Advanced Surveying. (3) I. Park
   Day and night triangulation, measurement of base lines, adjustments and computations. Plane table. Prerequisite, 2. Fee, $5. Not for graduate credit.

106R. Reinforced Concrete Construction. (3) I. Kelton
   Beams, girders, slabs, columns, footings, retaining walls, and buildings. Prerequisite, 126. Fee $1.

106L. Materials Testing Laboratory. (1) I. Kelton
   Testing of sand, rock, cement, and plain and reinforced concrete. Taken in conjunction with 106R. Fee, $3.

107. Steel Mill Buildings. (3) I. Kelton
   Roof trusses, steel bracing, transverse bents, and structural steel detailing. Prerequisite, 126. Fee, $1.

108. Bridge Design. (3) II. Kelton
   Prerequisite, 107. Fee, $1.

110. Railroad Engineering. (3) II. Park
   Reconnaissance and preliminary surveys; simple, easement, and vertical curves; profiles, earthwork computations, location. Prerequisite, 103. Fee, $5. Not for graduate credit.

111R. Hydraulics. (3) I or II. Borgquist
   Hydrostatic pressures in reservoirs; velocity and discharge from weirs and pipes; flow in pipes and canals. Prerequisites, Mathematics 100b and 112a. Not for graduate credit.

111L. Hydraulic Laboratory. (1) II. Borgquist
   A laboratory study of the flow of water through orifices, weirs, pipes, and determination of coefficients pertaining to same. Fee, $2. Not for graduate credit.

113. Irrigation Structures. (4) II. Kelton
   Prerequisites, 2, 106R, and 111R. Fee, $1.

114R. Mechanics of Materials. (3) I or II. Borgquist
   Analysis and computation of stresses and strains in bodies subjected to tension, compression, and shear; equation of the elastic curve, deflections in beams. Prerequisite, Mathematics 112a. Not for graduate credit.

114L. Materials Testing Laboratory. (1) I or II. Borgquist
   Brick, wood, iron, and steel. Fee, $3. Not for graduate credit.

115. Business Law for Engineers. (2) I. Kelton
   Prerequisite, Senior standing.
116. Advanced Civil Engineering Problems. (2 to 5) I or II. Staff
Investigation, design, or original research. Open to Senior students in civil engineering.

122. Highway Engineering. (2) II. Park
Economic highway location and construction; grading, drainage, and financing. Not for graduate credit.

124. Pavements. (2) II. Borgquist
Methods of construction of flexible and rigid pavements, for both rural and city use. For Senior engineering students only.

125. Graphic Statics. (2) I. Kelton
Prerequisite, Mathematics 112a. Fee, $1. Not for graduate credit.

126. Theory of Structures. (3) II. Kelton
Influence lines, concentrated load systems, eccentric riveted joints, design of simple roof trusses, etc. Prerequisite, 125. Fee, $1. Not for graduate credit.

130. Foundations of Bridges and Buildings. (1) II. Borgquist
The bearing power of soils; construction methods of excavation; the adaptation of various types of footings to structures; piles in foundations; etc. Prerequisite, Senior standing.

137. Water Supply. (2) I. Borgquist
Development of water supply; study of present and future needs; design of purification plants and distribution systems. Two lectures. Prerequisite, 111R.

138. Sewerage. (2) II. Borgquist
Sewage collection; design of sewers and storm drains; treatment processes in sewage disposal. Two lectures. Prerequisite, 111R.

200. Advanced Civil Engineering Problems. (2 to 5) I or II. Staff
Investigation, research, or design. Primarily for graduate students.

CLASSICAL LITERATURE

Professor Fowler.
Assistant Professor Percy (Head of the Department).

The major: 24 units above 1b, including 15a-15b, 107a-107b or 108a-108b, 221a.

The supporting minor shall consist of 20 units advised from: English, French, German, Spanish, philosophy, history.

The teaching minor consists of not less than 15 units above 1b and must include 2a-2b and 15a-15b. Students offering two years of Latin for entrance must take 15a-15b, 105a-105b.

LATIN

1a-1b. Beginners’ Course in Latin (4-4) Yr. Fowler
Credit toward graduation in la Is allowed only after completion of 1b.

2a-2b. Roman Literature, Elementary Course. (4-4) Yr. Fowler
Selections from the writings of Cicero, Ovid, Virgil, and Pliny. Prerequisite, 1b or equivalent.

15a-15b. The Writing of Latin. (1-1) Yr. Fowler
A practical course in Latin composition. Prerequisite, 2b.

105a-105b. Roman Literature, Advanced Course. (3-3) Yr. Fowler
Representative selections from Latin literature. Prerequisite, 2b. Not for graduate credit.

107a-107b. Pre-Augustan Literature. (3-3) Yr. Fowler
First semester, selections from the Roman Comedy. Second semester, selections from the works of Lucretius and Cicero. Prerequisite, 105b. Offered in 1938-39 and alternate years.
108a-108b. Augustan and Post-Augustan Literature. (3-3) Yr. Fowler
First semester, selections from Livy and Horace. Second semester, selections from Tacitus and Juvenal. Prerequisite, 105b. Offered in 1937-38 and alternate years.

221a-221b. Seminar in Latin. (2 to 4-2 to 4) Yr. Fowler
Readings in the literature and study of special problems by the individual student. Open to those who have taken at least four of the upper-division courses in Latin.

GREEK

51a-51b. Elementary Greek. (4-4) Yr. Fowler
A beginners' course in the Greek language and literature, including selections from Plato and the New Testament.

152a-152b. Attic and Homeric Greek Literature. (4-4) Yr. Fowler
Reading and interpretation of selections from Attic and Homeric Greek. Prerequisite, 51b.

GENERAL LINGUISTICS

231a-231b. Introduction to the Study of Language. (2-2) Yr. Fowler
Fundamental concepts of language, such as the origin of language, the classification of languages and of speech sounds, phonetic change, analogy, semantic change, morphology, syntax. Designed for students specializing in any of the languages. Offered in 1937-38 and alternate years.

Classical Literature Honors. (2-2) Yr.
For particulars see page 114.

DAIRY HUSBANDRY

Professors W. S. Cunningham (Head of the Department), Davis. Assistant Professor Greene.

1. Principles of Dairying. (2) I. Cunningham-Davis
The production of milk; testing, care and handling of dairy products; judging dairy cattle. One lecture and one three-hour laboratory period. Fee, $2.

101. Market Milk. (3) II. Davis
The classes of market milk, methods used in clean milk production, systems of milk inspection, and scoring of dairies. Prerequisites, Dairy Husbandry 1, Bacteriology 107. Two lectures, one three-hour laboratory period. Fee, $2. Offered in 1938-39 and alternate years. Not for graduate credit.

103. Dairy Management. (3) I. Cunningham
Dairy farm management; methods of feeding; developing dairy herds; dairy equipment; registration of animals; official testing. Three lectures. Not for graduate credit.

104. Types and Breeds of Dairy Cattle. (3) II. Cunningham
Advanced judging. The breeding of dairy cattle, the “bull index,” proven sires, selection of the dairy herd sire. Two lectures and one three-hour demonstration period. Field trip fee, $2. Offered in 1937-38 and alternate years. Not for graduate credit.

105. Manufacture of Butter. (3) I. Davis
Receiving milk and cream for buttermaking, preparation of starters, ripening and churning of cream, and marketing of butter. Two lectures and one three-hour laboratory period. Fee, $2. Offered in 1937-38 and alternate years. Not for graduate credit.

106. Cheese Making. (3) II. Davis
Selection of milk, manufacture, curing and marketing Cheddar, brick, cream, Neufchatel, and cottage cheese. Prerequisite, 1. Two lectures and one three-hour laboratory period. Fee, $2. Offered in 1937-38 and alternate years. Not for graduate credit.
107. Manufacture of Ice Cream and Ices. (3) I.  Davis  
Prerequisite, I. Two lectures and one three-hour laboratory period. Fee, $2. Offered in 1938-39 and alternate years. Not for graduate credit.

108. Condensed Milk Products. (2) I.  Davis  
Manufacture of condensed and powdered milks, milk sugar, casein, and malted milk. Quality factors and defects in these products. Two lectures. Offered in 1937-38 and alternate years. Not for graduate credit.

109. Dairy Bacteriology. (3) II.  Greene-Davis  
Bacteria in milk and milk products; the production and handling of dairy products from the hygienic viewpoint. Prerequisites, Dairy Husbandry 1, Bacteriology 107. Two lectures and one three-hour laboratory period. Laboratory fee, $2. Offered in 1937-38 and alternate years.

201. Advanced Testing and Inspection of Dairy Products. (2) I.  Davis  
Advanced work is given in the testing of dairy products including tests for adulterations, moisture, casein, and preservatives. Prerequisites, Dairy Husbandry 1 and Bacteriology 107. Two three-hour laboratory periods. Fee, $2. Offered in 1938-39 and alternate years.

202. Dairy Chemistry. (3) II.  Davis-Greene  
The physical and chemical properties of milk and dairy products and the chemical changes involved in ripening, manufacture, and storage. Prerequisites, Dairy Husbandry 1, Chemistry 1a-1b, 40. Two lectures and one three-hour laboratory period. Laboratory fee, $2. Offered in 1938-39 and alternate years.

204a-204b. Seminar in Dairy Husbandry. (2-2) Yr.  Cunningham-Davis  
Assigned readings and special problems relating to the dairy industry and providing a basis for research work.

214a-214b. Research in Dairy Husbandry. (3-3) Yr.  Cunningham-Davis  
Graduate students specializing in dairy husbandry may undertake research work which will be embodied in a thesis.

DRAMATIC ART

Associate Professor Davis (Head of the Department).  Instructor Brown.

The major: 22a-22b, 121a-121b, 122a-122b, and 123a-123b. It is recommended that majors include 21a-21b, 24a-24b, English 131a-131b, 134, Speech 2a-2b, 5 or 167, Rhythmics 3a-3b (for women, for men if desired).

The supporting minor should be chosen from: art, English, foreign language, history, music, philosophy, psychology, speech.

The minor in dramatic art in the College of Liberal Arts and the College of Education: Dramatic Art 21a-21b, 22a-22b, 122a-122b.

21a-21b. Stagecraft. (3-3) Yr.  Brown  
Construction of scenery, organization backstage, drafting, mask making, dyeing.

22a-22b. Dramatic Production. (3-3) Yr.  
The fundamentals of acting and play production, including stage movement, stage make-up, dramatic values, and appreciation of voice. Play reading.

24a-24b. History of Theatrical Art. (3-3) Yr.  
Development of the physical theater, the great movements in the theater, their influence and effects upon social conditions with a study of outstanding actors of all ages.

120a-120b. Playwriting. (2-2) Yr.  
Practical playwriting, required readings, analysis and criticism. Prerequisite, English 134. Not for graduate credit.
121a-121b. Stage Costuming. (3-3) Yr.
A study of important periods as related to stage costuming. Execution of costuming for all productions will be carried on from plates and models. Not for graduate credit.

122a-122b. Advanced Dramatic Production. (3-3) Yr.
A specialized course including advanced technique of acting, participation in directing, fencing, analysis of plays, together with an appreciation of all factors leading to a completed production. Prerequisite, 22a-22b. Not for graduate credit.

123a-123b. Scene Design and Stage Lighting. (3-3) Yr.
Brown
Two one-hour lectures and one three-hour laboratory period. Practice in actual execution of designs and models together with the physics and use of color in lighting. Practical experience in productions. Not for graduate credit.

124a-124b. Appreciation of Drama. (2-2) Yr.
Drama as a literary form. Study of the outstanding playwrights of America and Europe with special emphasis on social conditions as related to drama. Prerequisite, English 131 or 134. Not for graduate credit.

ECONOMICS, SOCIOLOGY, AND BUSINESS ADMINISTRATION

Professors E. J. Brown (Head of the Department), Howard, Conrad, Schmidt.
Lecturers Parnell, Herndon.
Associate Professors Wood, Herrick, Gray, Roberts.
Assistant Professors Wanous, Harvill.
Instructor Cox.

ECONOMICS

The major: 23 units, exclusive of Economics 1a-1b or 2a-2b, including Sociology 81, Economics 148, 203, 210a or 210b, and 12 additional upper-division units in economics. Courses in business administration may not be counted as part of the 12 additional upper-division units in economics.

The supporting minor should be chosen from: anthropology, biology, English, history, philosophy, political science, psychology, sociology, mathematics.

The teaching minor must include Economics 1a-1b, 81, 148, and 3 to 8 units of upper-division work.

Social Science Survey. (3-3) Yr.
Wedel, Brown, Harvill
General interdepartmental course, see page 148.

1a-1b. Introduction to Economics. (3-3) Yr.
Staff
Not open to students majoring in economics and business administration. This course or Economics 2a-2b is a prerequisite to all upper-division courses in economics and business administration. Open to Freshmen.

2a-2b. Principles of Economics. (3-3) Yr.
Gray
For students majoring in economics or business administration. Prerequisites, Business Administration 6 and Sophomore standing. This course or Economics 1a-1b is a prerequisite to all upper-division courses in economics and business administration.

101. Economics for Engineers. (3) I.
Roberts
For engineering students only. Not for graduate credit.
103a. Economic History of Europe. (3) I. Schmidt
   A survey of the economic evolution of Europe.

103b. Economic History of the United States. (3) II. Schmidt
   A study of the development of the economic institutions of the United States.

105. Labor Problems. (3) I. Gray
   History and development of labor organizations and capital. Policies and methods of industrial warfare.

117. International Economic Relations. (3) I. Harvill
   International relations arising from the economic interests and practices of nations.

121. Transportation. (3) II. Gray
   History of transportation; organization; finance; theory of rates; rate structures; regulation by the states and the federal government; motor transportation.

145. Public Finance. (3) I. Roberts
   Collection, administration, and expenditure of funds by governments. Taxation, public debts, budgets.

148. Money and Banking. (3) I or II. Brown
   Theory and practice in the light of contemporary legislation.

149. Advanced Problems in Money and Banking. (3) II. Brown
   Major problems in money and banking which are either not considered or inadequately considered in Economics 48. Prerequisite, 148. Offered in 1938-39 and alternate years.

172. Government and Business. (3) II. Roberts
   The change in the relations of government to business, and the philosophy underlying it. Offered in 1937-38 and alternate years.

174a-174b. Public Utilities. (2-2) Yr. Gray
   The development, financing, rate making, management, and control of public utility enterprises.

203. Advanced Economic Theory. (3) I or II. Schmidt-Havrill
   A survey of economic theory. For Seniors and graduate students.

204. Economic Dynamics. (3) II. Harvill
   Analysis of the causes of fluctuations; a description and evaluation of the various proposals designed to eliminate or curtail them. Prerequisites, 148 and 203.

207. History of Economic Thought. (3) II. Harvill
   Economic facts and forces, their origin and growth, the rise of the science of economics. Prerequisite, 203.

210a-210b. Seminar in Economics. (2-2) Yr. Staff
   Theoretical and applied problems of economics. Preparation of scientific papers, collection of material, preparation for research. For Seniors and graduate students.

215a-215b. Problems in Economics. (2 to 6-2 to 6) Yr. Staff
   Open only to graduate students with the privilege of repetition upon change of subject matter. Students admitted upon consent of department. Definite requirements as to lectures, readings, or research.

The Teaching of Social Science. (3) I. Schmidt
   For description see Education 197f. Required of students in the College of Education majoring in history, economics, or political science.

Economics Honors. (2-2) Yr.
   For particulars see page 114.
SOCIOLOGY

The major: Economics 1a-1b, Sociology 81, 181, 287a or 287b, and 12 additional units of sociology, 6 units of which may be taken from the following group: Anthropology 105a, Philosophy 120, Economics 105.

The supporting minor should be chosen from: anthropology, economics, history, philosophy, political science, psychology.

81. Introduction to Sociology. (3) I or II. Conrad
The nature, backgrounds, and problems of contemporary society. Elements of social theory. Prerequisite to upper-division courses.

181. Principles of Sociology. (3) I. Conrad
An analysis of groups, institutions, social organization, social stratification and such social processes as socialization, conflict, co-operation, accommodation, social change, social control, etc.

182. Social Pathology. (3) II. Conrad
The nature and causes of social pathology; the disorganization of individuals, families, groups, communities, etc. Offered in 1937-38 and alternate years.

183a-183b. Social Evolution and Social Progress. (2-2) Yr. Conrad
Social heritages, problems of social change, and theories of social progress. For Seniors and graduate students. Offered in 1937-38 and alternate years.

184. Social Problems. (3) II. Conrad
A survey of social problems such as population, immigration, race, divorce, housing, and health. Social factors and changes producing contemporary problems. Not for graduate credit. Offered in 1938-39 and alternate years.

186. Charities and Social Work. (2) I. Conrad
Causes and problems of dependence; the methods of treatment used by public and private agencies; the principles, aims, and types of social work. Offered in 1938-39 and alternate years.

187. Crime and Punishment. (2) II. Conrad
Nature and causes of crime; administration of penal and reformatory institutions; problems of correction and prevention. Offered in 1938-39 and alternate years.

287a-287b. Seminar in Sociology. (2 or 3-2 or 3) Yr. Conrad
Advised for students taking a major in sociology. For Seniors and graduate students.

Sociology Honors. (2-2) Yr.
For particulars see page 114.

Related Courses:
Anthropology 203a-203b; Economics 103a-103b; Political Science 153, 154; Psychology 15, 118; Zoology 114, 116; Home Economics 127, 137.

BUSINESS ADMINISTRATION

There is no general major in business administration. Majors in economics, sociology, and other departments in the College of Liberal Arts may count but 12 unstarred units of business administration toward graduation. Students who desire to register for the four-year course leading to the degree of Bachelor of Science in Business Administration will follow the outline of required studies shown on page 117 and will select one of the majors suggested there.

The teaching major in commercial subjects: Business Administration 6, 11, 31a-31b, 76a-76b, 120a, 170a-170b, and 211.

Teaching minor in commercial subjects: Business Administration 31a-31b, 76a-76b, and at least 3 additional units.

The following courses may be counted as Business Administration: Economics 121, 149, 172, 174.
6. * Introduction to Business. (3) I or II. Schmidt
   A survey of the fundamental characteristics and functions of modern
   business. This course is a prerequisite to Economics 2a-2b.

11. * Economic Geography. (3) I or II. Herrick
   The world's resources, their distribution, use, and conservation. The struggle
   for raw materials. Climate and civilization.

13. Orientation. (1) I. Staff

31a-31b.* Principles of Accounting. (3-3) Yr. Howard
   Accounting for sole proprietorship, partnerships, and corporations. Two
   lecture hours and one three-hour laboratory period. Prerequisite to all ad-
   vanced courses in accounting and finance except Economics 148.

55.* Statistical Methods in Business. (4) I or II. Herrick
   Collection, tabulation, and analysis of statistical material; graphic presen-
   tation of numerical data. Three lecture hours and one three-hour laboratory
   period. Not open to Freshmen.

76a-76b. Office Training. (4-4) Yr. Wanous
   Operation of office machines. Advanced training in typing and shorthand
   for the commercial teacher and commercial secretary. Prerequisites, one
   year of shorthand and typing speed of thirty-five words a minute. Fee,
   $7.50 per semester.

111. Economic Geography of America. (3) II. Herrick
   Discussion of climate, soil, agriculture, minerals and industrial produc-
   tion of North and South America. Prerequisite, 11. Offered in 1937-38 and
   alternate years.

120a-120b. Business Law. (3-3) Yr. Parnell
   The fundamental principles of the law of contracts, agency, negotiable
   instruments, sales, partnership, and corporations.

130. Accounting for Engineers. (3) II. Howard
   For engineering students only except with consent of the instructor. Not
   for graduate credit.

131a-131b. Intermediate Accounting. (3-3) Yr. Howard
   Partnership and corporation accounts; valuation; consignments; branch
   house accounts; accounting for insolvent concerns; statements of sources
   and applications of funds; financial reports.

133. Cost Accounting. (3) I. Howard
   Methods and principles involved in handling materials and direct labor,
   the distribution of overhead expenses. Offered in 1937-38 and alternate years.

134. Auditing Theory and Practice. (3) II. Howard
   Qualifications, duties, and responsibilities of the public auditor; principles
   and procedure involved in audits; working papers and reports. Prerequisite, 131a.
   Offered in 1937-38 and alternate years.

136a-136b. Advanced Accounting. (3-3) Yr. Howard
   Annuities; revaluation of capital assets; depreciation; consolidated state-
   ments; brief survey of federal income tax procedure. Offered in 1938-39 and
   alternate years.

137a-137b. Governmental and Institutional Accounting. (3-3) Yr. Howard-Herndon
   Budgetary accounting and financial control and its application to various
   governmental units—cities, counties, and public institutions. Prerequisite, 31a-31b.
   Offered in 1937-38 and alternate years.

138. Financial and Accounting Control. (3) I. Herrick
   Application of accounting principles to the control of industrial enter-
   prises. Prerequisite, 31b. Two units credit to students who are taking or
   have completed more than one year of accounting.

141. Business Finance. (3) I. Roberts
   Financial problems met in the organization and conduct of a business.
   Prerequisite, 31b.
142. The Stock Market and Investments. (3) II. Roberts
Investment market, financial agents and institutions; methods of investment and speculations. Prerequisite, 141.

151a-151b. Insurance Theory and Practice. (3-3) Yr. Herrick
151a: Phases of most general application; life, fire, and automobile.
151b: Casualty insurance covering health, accident, compensation, liability, burglary, credit, etc., together with a brief consideration of marine and title insurance.

161a. Principles of Marketing. (3) I. Wood
Description and evaluation of the services and methods of middlemen in the distribution of goods from producer to consumer.

161b. Market Management. (3) II. Wood
The organization, policies, and work of the selling, advertising, credit, purchasing, and research departments of manufacturing and wholesale firms. Prerequisites, 31b, 161a. Offered in 1938-39 and alternate years.

162. Principles of Selling. (3) I. Cox
The fundamental relations between sales person and customer involved in a sales transaction. Development of sales personality as a factor in selling goods and services. Store practice hours to be arranged. Two lectures and six hours of store practice per week. Prerequisite, Economics 2b.

163. Retail Store Management. (3) II. Wood
The organization and management of retail enterprises. Two lectures and one two-hour laboratory period. Prerequisites, 31b, 161a. Offered in 1937-38 and alternate years.

164. Principles of Advertising. (3) II. Wood
The place of advertising in business; effective use of copy; selection of media. Registration limited to thirty.

170a-170b. Advanced Secretarial Work. (4-4) Yr. Wanous
A continuation of the work of 76a-76b. A study of the general principles of organization and management applied to the office. Three lectures and two two-hour laboratory sections. Fee, $7.50 per semester.

171a-171b. Business Organization and Management. (3-3) Yr. Brown
Considerations determining the choice, location, and form of business; policy formation; principles underlying sound organization and management. Prerequisite, 31b.

211a-211b. Seminar in Business Administration. (2-2) Yr. Staff
Theoretical and applied problems of business; preparation of scientific papers; collection of material; preparation for research. For Seniors and graduate students.

220a-220b. Problems in Business Administration. (2 to 6-2 to 6) Yr. Staff
Open only to graduate students with the privilege of repetition upon change of subject matter. Students admitted upon consent of the department. Definite requirements as to lectures, reading, or research.

EDUCATION

Professors Clarson (Dean of the College), Larson, Lutrell, Walker.
Associate Professors Garretson, Repp.
Assistant Professor Jones.
Assistant Supervisor of Apprentice Teaching Peak.

The major: Education 110, 111, 121 or 131 or 141, 124 or 134, 151, 157, and additional courses sufficient to constitute a total of 24 to 40 units to be selected with the advice of the department and depending upon the purposes of the individual students. Undergraduates admitted from normal schools or teachers' colleges and specializing in certain fields of education may, with the advice and consent of the department, exceed the maximum number of units permitted for the major.
Graduate students majoring in education should arrange their courses with a view to their bearing upon one of the following fields: educational psychology, high-school teaching, high-school administration, city-school administration, supervision, or educational research. Graduate students wishing to major or minor in education must offer 15 units in education or the equivalent as a prerequisite.

All courses in education are professional courses and have a prerequisite of 60 units of approved college credit. All students taking or having in the aggregate more than 6 units in education, except candidates for Special Certificates, must register in the College of Education.

102. Library Methods and Management. (2) II. Lutrell
   Classifications and cataloging; common reference books, bibliographies, indices, and public documents; sales catalogues and book selection. Not for graduate credit.

105. Personnel Guidance. (2) II. Jones
   The position of dean or advisor of girls; its status and function; qualifications and training; the role of the teacher in personnel work. Preliminary course for those who expect to specialize in the field of guidance for women. Prerequisites, Psychology 1a, Education 131 or its equivalent.

109. Vocational Education. (2) II. Klemmedson
   The underlying philosophy of vocational education; its historical development and its administration. Required of those preparing to teach agriculture or home economics. Open to others.

110. Social Phases of Education. (3) II. Larson
   The social-civic theory of education to develop perspective and an understanding of administrative and other practices. Offered in 1937-38 and alternate years.

111. History of Education. (3) I. Repp
   A general survey of the educational systems of the leading foreign nations and an evaluation of modern tendencies. Offered in 1938-39 and alternate years.

112. History of Education in the United States. (3) II. Repp
   The development of our educational system from colonial foundations to the present. The aim will be to bring about increased understanding and appreciation of the national system through authentic information as to its origin and development and the principles involved.

121. The Elementary School. (3) I. Larson
   The purpose and curriculum of the elementary school. Available courses studied and criticized, and a defensible curriculum proposed. Prerequisite, 3 units in education.

124. General Elementary School Methods. (3) II. Larson
   Methods of the elementary grades. Methods of teaching reading, writing, spelling, arithmetic, and other specific elementary school subjects. Prerequisite, 151 or its equivalent. Offered in 1938-39 and alternate years.

131. The High School. (3) I or II. Larson
   The high school as an institution; historical development; aims, functions, and outcomes; the curriculum; relation to other divisions of the school system. Prerequisite, 3 units in education.

133. Extraclassroom Duties of the Teacher. (2) II. Garretson
   Participation of the teacher in duties other than teaching, including administrative functions, community contacts and obligations, and professional growth. Prerequisite, 6 units in education, including 134 or the equivalent. Offered in 1937-38 and alternate years.

134. General High-School Methods. (3) I or II. Garretson
   The actual problems of teaching with especial reference to the principles of educational psychology. Prerequisite, 151; should be preceded by or taken with 131.
141. The Junior High School. (3) I. 
Garretson

The junior high school as a distinct unit of organization; the origin and development of the idea; its functions and administrative organization. Prerequisite, 3 units in education. Offered in 1937-38 and alternate years. Not open for credit to students who have had 131.

150. Mental Hygiene. (2) II. 
Walker

The principles of mental hygiene and their application to personal and social needs. Prerequisite, 151 or the equivalent.

151. Educational Psychology. (3) I or II. 
Walker

How to bring about most certainly and economically the changes in the behavior of the individual which are desirable in the educational process. Prerequisite, Psychology la or its equivalent. Not for graduate credit.

152. Psychology of Elementary Education. (2) I. 
Walker

An application of the principles of psychology and of the laws of learning to the several subjects of the curriculum. Prerequisites, Psychology la and Education 151 or equivalents. Offered in 1937-38 and alternate years.

153. Psychology of Secondary Education. (2) I. 
Walker

An application of the principles of mental hygiene and of the laws of learning to the government and curricular activities of the secondary school. Prerequisites, 131 and 151 or equivalents. Offered in 1938-39 and alternate years.

157. The Improvement of Teaching Through Tests. (3) I or II. 
Walker

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. Prerequisite, 151 or its equivalent.

197a.* The Teaching of Agriculture. (4) II. 
Klemmedson

Specific methods in teaching vocational agriculture. Prerequisite, 134. Three lectures and one three-hour laboratory period. (See Agricultural and Home Economics Education.) Fee, $1.

197b.* The Teaching of Botany. (3) I or II. 
Crooks

Aims and value of botany in the secondary schools. Contents of the courses and methods of teaching elementary botany. One hour lecture and two three-hour laboratory periods. Prerequisites, 134 and 12 units of botany.

197c.* Teaching of Typewriting and Shorthand. (3) II. 
Wanous

A study of the methods used in teaching all typewriting; keyboard drills, letterwriting, centering, tabulation, manuscript writing. Methods of building speed and accuracy evaluated. A discussion of the various methods of teaching shorthand; transcription speed and notewriting ability stressed. Prerequisites, Education 134 and Business Administration 170b.

197d.* The Teaching of English. (3) I. 
Frazier

The field of high-school English and its various divisions. Aims, methods, and devices, the selection and use of texts. Blocking out courses. Prerequisites, 134 and 12 units in English, including English 6 or its equivalent.

197e.* The Teaching of French. (3) II. 
Roy

Various methods of teaching languages as applied to French; selection of texts; outlining of courses for high schools. Prerequisites, 134 and 12 units in French. Offered in 1937-38 and alternate years.

197f.* The Teaching of Social Science. (3) I. 
Schmidt

Aims of teaching social science; textbooks; charts; lesson plans; class exercises; collateral reading. Prerequisites, 134 and 12 units in social science.

* All specific methods courses, or courses in the teaching of the several high-school subjects, are listed under this general number, Education 197, with the designating subscripts as indicated. These courses carry credit in education only, not in the several subject-matter departments. Education 134 is a prerequisite for all of these courses. Required of students in the College of Education. Open to Juniors and Seniors. No graduate credit is allowed for any of the courses numbered 197.
197g.* The Teaching of Home Economics. (3) I.  
Jones  
Application of general principles of education to the teaching of home economics. Objectives: selection and organization of subject matter, methods of teaching. Prerequisites, Junior standing, 134, and 12 units in vocational home economics.

197k.* The Teaching of Spanish. (3) I.  
Nicholson  
Methods of language instruction and their adaptation to the teaching of Spanish. Selection of texts, outlining courses; lesson planning. Prerequisites, Education 134 and Spanish 110b or the equivalent.

197i.* The Teaching of Mathematics. (3) II.  
A survey of carefully chosen textbooks in junior high school mathematics, algebra, and geometry. Lesson planning and methods. Prerequisites, Education 134 and Mathematics 25 or its equivalent. Offered in 1937-38 and alternate years.

197l.* The Teaching of Art. (3) I.  
Kitt  
The needs of art in the schools, its aim and object; methods of presenting it. Outlines for the work in the different grades. Prerequisites, 134 and 12 units in art.

197m.* The Teaching of Music. (3) I.  
Schultz  
The high-school course of study in music; subject matter, content, suitable texts and methods of conducting and teaching classes. Prerequisites, 134 and 12 units in music above 2b.

197n.* The Teaching of Physical and Health Education for Women. (3) II.  
Gittings  
Information regarding the administration of a physical education plant and program; lesson plans; instruction in the use and care of equipment; discussion of credits, schedules, curriculum content, etc. Prerequisites, 134 and 12 units in physical education above 2b.

197o.* The Teaching of Bookkeeping and General Business Training. (3) I.  
Wanous  
A course devoted to the teaching of bookkeeping, business training, and business law in the secondary schools. The content of each of the courses is outlined, and special methods for teaching each are studied. Prerequisites, 134 and 12 units in business administration including 6 units in accounting.

197p.* The Teaching of Physical Education for Men. (3) I.  
Picard  
Methods and purpose of teaching physical education, the equipment necessary, lesson and program formation, and administration. Prerequisites, 134 and 12 units in physical education.

197r* The Teaching of Rhythmics and Dancing. (2) I or II.  
Wright  
Methods and practical experience in the teaching of rhythmics and folk dancing. Lesson planning and administration of dancing complying with the principles of general education. Prerequisites, 134 and 12 units in rhythmics.

197q.* The Teaching of Speech. (3) II.  
Cable  
For school administrators and teachers of the various phases of speech; survey of the subject matter, administration, methods of teaching, and literature in the several fields of speech. Prerequisites, 134 and 12 units in speech.

197z.* The Teaching of Zoology. (3) I.  
Vorhies  
Aims and value of zoology in the secondary school. Contents of the courses and methods of teaching elementary zoology. One lecture and two three-hour laboratory periods. Prerequisites, 134 and 12 units in zoology.

* All specific methods courses, or courses in the teaching of the several high-school subjects, are listed under this general number, Education 197, with the designating subscripts as indicated. These courses carry credit in education only, not in the several subject-matter departments. Education 134 is a prerequisite for all of these courses. Required of students in the College of Education. Open to Juniors and Seniors. No graduate credit is allowed for any of the courses numbered 197.
199. Apprentice Teaching. (3 to 5) I or II.  Garretson

By co-operative arrangement with the Tucson Public Schools, each student serves as an apprentice to a regular teacher of the system and is given an opportunity to apply, under normal classroom conditions, the principles and techniques of teaching. Prerequisites, 131, 134, 197 (in the student's major subject), and a satisfactory grade attainment in the student's major subject and in education. Not for graduate credit. Hours to be arranged.

201. Current Problems in Education. (2) II.  Clarson

A systematic study of the problems found in current educational literature, research studies, school reports, and similar material. For Seniors and graduate students. Prerequisite for Seniors, 6 units in education. Required of all graduate students having education as a major or minor.

203. Problems in Educational and Vocational Guidance. (2) II.  Garretson

The function and scope of guidance and an analysis and evaluation of the organization and techniques of counseling in the secondary schools. For Seniors and graduate students. Prerequisite for Seniors, 6 units in education. Offered in 1937-38 and alternate years.

205a-205b. Student Personnel Administration. (4-4) Yr.  Jones

Seminar in personnel guidance with applied work under the dean of women and selected high school deans. Open to graduate students with the consent of the instructor. Registration limited. Prerequisites, 105 or its equivalent and training in education and psychology.

210a-210b. Philosophy of Education. (2-2) Yr.  Larson

A critical study of the data which recent scientific research has furnished with reference to the nature of the learning process; determination of the leading objectives in teaching. For Seniors and graduate students. Prerequisites for Seniors, 6 units in education. Offered in 1938-39 and alternate years.


The principles and problems of public education in Arizona. The code relating to schools and a comparison of this code with other state codes and ideal codes. For Seniors and graduate students. Prerequisite for Seniors, 6 units in education.

227. Elementary School Administration and Supervision. (2) II.  Larson

The administrative and supervisory problems of the principal of a ward school, or of a small school system. Prerequisites, 121 and 124 or their equivalents or teaching experience. For Seniors and graduate students. Offered in 1937-38 and alternate years.

233. Extracurricular Activities in Junior and Senior High Schools. (2) I.  Garretson

The purposes of extracurricular activities. The technique of administration of various extracurricular activities. Prerequisites for Seniors, 131 and 134 or their equivalents. Offered in 1938-39 and alternate years.

236. High School Administration and Supervision. (3) I.  Garretson

The problems of organization, administration, and supervision of the modern high school. For Seniors and graduate students. Prerequisite, 131 or its equivalent.

238. The Curriculum. (3) II.  Larson

The curriculum and its relationships. Basic theories and techniques of curriculum construction discussed, evaluated, and applied. Prerequisite, 131 or the equivalent. Offered in 1937-38 and alternate years.

239. Investigations in Secondary Education. (2) II.  Garretson

A critical study and evaluation of the investigations and experimental evidence underlying the aims and instructional practices of the various subject matter fields of the secondary school. Prerequisite, 9 units in education. Offered in 1938-39 and alternate years.
251. Seminar in Educational Psychology. (2) II. Walker
Problems of educational psychology. The content of the course will depend upon the interests of the class. Prerequisites, Psychology 1a and 6 units in education, including Education 151 or its equivalent. For Seniors and graduate students. Offered in 1937-38 and alternate years.

254a. Statistical Methods in Education. (3) I. Walker
Elementary methods of dealing quantitatively with school data and data resulting from experimental investigations. Required as a part of the graduate major in education.

254b. Advanced Statistical Methods. (2) II. Walker
The application of the common procedure of statistics, including multiple and partial correlation, to specific school and research problems. For Seniors and graduate students. Prerequisite, 245a or its equivalent.

257. Educational Measurements. (2) II. Walker
The practical application of measurement to actual school situations. Administration, scoring, and interpretation of results of standardized tests. Prerequisites, 157 and 254a or their equivalents. Offered in 1938-39 and alternate years.

260a-260b. City School Administration. (2-2) Yr. Larson
The problems of organization, administration, and supervision of city and town school systems. For Seniors and graduate students. Prerequisite for Seniors, 6 units in education. Offered in 1938-39 and alternate years.

261. State School Administration. (3) I. Larson
The federal government and its policy with respect to education; state organization, administration, and financial policy; the various units of administration and supervision. For Seniors and graduate students. Prerequisite for Seniors, 6 units in education. Offered in 1937-38 and alternate years.

262. Rural School Administration. (3) II. Larson
The rural school problem from the standpoint of administration and supervision. For Seniors and graduate students. Prerequisite for Seniors, 6 units in education. Offered in 1938-39 and alternate years.

270. Personnel Problems in School Administration. (2) I. Larson
The administrative problems relating to school personnel; principals, teachers, janitors, and other employees. For Seniors and graduate students. Prerequisite for Seniors, 6 units in education. Offered in 1937-38 and alternate years.

271. School Finance. (2) II. Larson
Sources of school support, the economical and equitable distribution of school funds, systems of accounting, financial records, and reports. For Seniors and graduate students. Prerequisite for Seniors, 6 units in education. Offered in 1937-38 and alternate years.

272. School Surveys. (2) I. Larson
An advanced course in administration, offering to mature students an opportunity to learn the method of scientific school administration through the intensive study of one or two examples of survey work and the application of the principles thus derived to a concrete case of survey work done by the student himself. For Seniors and graduate students. Prerequisite for Seniors, 6 units in education. Offered in 1937-38 and alternate years.

276. Supervision. (2) II. Larson
The necessary qualifications and training of supervisors; essential activities in supervision; organization and administration of the program of supervision. For Seniors and graduate students. Prerequisite for Seniors, 6 units in education. Offered in 1938-39 and alternate years.

290. Educational Research. (2) I. Clarson
For advanced students majoring in education. Various methods of research; representative studies of each type. For Seniors and graduate students. Prerequisite for Seniors, 6 units in education. Required of all graduate students with education as a major.
Advanced Studies in Education. (2 to 4) I or II. Staff
For students who wish to carry on independent study or research under the supervision of a member of the staff. May be repeated with different problems. Conference hours to be arranged.

Education Honors. (2-2) Yr.
For particulars see pages 81 and 114.

**ELECTRICAL ENGINEERING**

**Professor J. C. Clark (Head of the Department).**
**Assistant Professor Polk.**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>100a-100b</td>
<td>Theory of Circuits and Machines. (4-4) Yr. Clark-Polk</td>
<td>4-4</td>
<td>Physics 1b, Mathematics 100b; 100a is prerequisite to 100b. Not for graduate credit.</td>
</tr>
<tr>
<td>101a-101b</td>
<td>Electrical Laboratory. (1-1) Yr. Polk</td>
<td>1-1</td>
<td>100a and 100b. Training in engineering reports. One three-hour period. Prerequisites, the same as for 100a-100b. Fee, $2 each semester. Not for graduate credit.</td>
</tr>
<tr>
<td>102</td>
<td>Theory of Alternating Current Machines. (3) I. Polk</td>
<td>3</td>
<td>100b.</td>
</tr>
<tr>
<td>104</td>
<td>Electrical Power Equipment. (2) II. Clark</td>
<td>2</td>
<td>The electrical equipment of power plants and transmission systems. Open only to Senior electrical engineers. Two lectures. Field trips. Prerequisites, 102, 113, 130. Field trip fee, $10. Not for graduate credit.</td>
</tr>
<tr>
<td>106a-106b</td>
<td>Electrical Laboratory. (2-2) Yr. Polk</td>
<td>2-2</td>
<td>Illustrating 102. 106a is open to students who are taking 102. 106a is a prerequisite to 106b. Two laboratory periods. Fee, $4 each semester. Not for graduate credit.</td>
</tr>
<tr>
<td>107a-107b</td>
<td>Design of Electrical Machines. (2-2) Yr. Clark</td>
<td>2-2</td>
<td>The design of typical machines in order to consolidate the student's grasp of fundamentals. Two three-hour calculating periods. Prerequisite, 100b; 102 and 107a are prerequisite to 107b. Not for graduate credit.</td>
</tr>
<tr>
<td>112</td>
<td>Electrical Communications Engineering. (3) II. Polk</td>
<td>3</td>
<td>The principles underlying telephony, with special emphasis upon wire transmission theory. Three lectures. Prerequisite, 113.</td>
</tr>
<tr>
<td>113</td>
<td>Alternating Current Theory. (3) I. Polk</td>
<td>3</td>
<td>A continuation of alternating current theory begun in 100b. Three lectures. Prerequisite, 100b.</td>
</tr>
<tr>
<td>114</td>
<td>Theory of Electrical Transmission. (3) II. Clark</td>
<td>3</td>
<td>Analytical and graphical solution of transmission problems. Three lectures. Prerequisites, 102 and 113.</td>
</tr>
<tr>
<td>125a-125b</td>
<td>Seminar. (1-1) Yr. Clark</td>
<td>1-1</td>
<td>Topics of general interest, supplementing the contents of other courses. One one-hour period. Student membership in the A.I.E.E., or application therefor, is a prerequisite for either semester of this course. Not for graduate credit.</td>
</tr>
<tr>
<td>126aR-126bR</td>
<td>Elements of Electrical Engineering. (2-2) Yr. Polk</td>
<td>2-2</td>
<td>Direct and alternating current circuits and machinery. For students in nonelectrical branches of engineering. Two lectures. Prerequisites, Mathematics 100b and Physics 1b. 126aR is prerequisite to 126bR. Not for graduate credit.</td>
</tr>
<tr>
<td>126aL-126bL</td>
<td>Electrical Laboratory. (1-1) Yr. Polk</td>
<td>1-1</td>
<td>Illustrating 126aR-126bR. Reports. One three-hour period. Prerequisites, the same as for 126aR-126bR. Fee, $2 each semester. Not for graduate credit.</td>
</tr>
</tbody>
</table>
130. Economic Problems for Engineers. (2) I. Clark
Business problems which require knowledge of engineering for their solution. Analysis of the problem of the choice of investment. Prerequisite, Senior standing in any engineering course. Required of electrical engineering majors. Not for graduate credit.

150. Special Problems. (1 to 3) I or II. Clark
Analytical and experimental work to meet the needs of Senior electrical engineering students. Prerequisites, 102 and 106a.

200. Graduate Seminar. (1 to 5) I or II. Clark
Work meeting the desires of individual graduate students can generally be arranged for those who are properly prepared.

ENGLISH

Professors Pattison (Head of the Department), Lockwood, Frazier, Tucker, Solve.
Associate Professors Dudley, Thrift, Hamilton, Patrick.
Assistant Professors O'Connor,* Gillmor,† Fuller, Summers, Morgan, Muir McCormick.
Instructors Padgett, Hale, Raffman, Lee.

The major: 24 units exclusive of English 1a-1b and including 6, 126a-126b, 127a or 129a or 129b, 131a or 132a, 137 or 138a, and two semesters of advanced composition (5, 7, 101, 102, or 104) one of which must be upper-division work.

The supporting minor should be chosen from: history, Latin, French, German, philosophy, psychology, speech, dramatics, journalism, art, music, Spanish.

The teaching minor must include: English 6, 29a (or 127a or 129a or 129b or 137), 126a-126b, 131a or 132a, and one semester of advanced composition (5, 7, 101, 102, or 104). A combined major and minor in English may be taken so as to include 18 units in speech or 18 units in journalism and allied composition courses.

Note: Any student found notably deficient in the writing of clear and correct English may be asked at any time to take special work without credit until the deficiency is removed.

COMPOSITION

1a-1b. Freshman Composition. (3-3) Yr. Frazier and Staff
The study and practice of good writing, with emphasis on exposition. Short and long themes, collateral reading, conferences. Required of all freshmen. Students who fail to pass the placement examinations given during Freshman Week will be required to take English X without credit before they may be admitted to English 1a.
For the conditions under which exemption from English 1a may be granted, see page 43, "Required Subjects—Lower Division."

6. Modern Grammar and Modern Usage. (3) I or II. Frazier
Required of all majors and teaching minors. Prerequisite, 1b.

7a-7b. Sophomore Composition. (3-3) Yr. Gillmor-Solve
The writing of long weekly papers. In 7a the emphasis is on description and in 7b on exposition. Prerequisite, 1b; 7a is not prerequisite to 7b.

23. Business English. (3) I or II. McCormick
Primarily for students in Business Administration. Prerequisite, 1b.

101. Magazine Writing. (3) I. Muir
Composition for those who wish practice in rather advanced writing. Not for graduate credit. Limited to 20 students.

* On leave 1937-38.
† On leave second semester 1937-38.
102. Biographical Writing. (3) II.
   Thrift
   The application of various methods in the writing of biographical sketches. Not for graduate credit.

104a-104b. Story Writing. (3-3) Yr.
   Dudley
   Original stories based on close study of the technique of a few leading writers; 104a or equivalent is prerequisite to 104b. Not for graduate credit.

JOURNALISM

For students wishing to stress Journalism, the following majors aside from English are recommended: history, political science, economics, sociology. For the combined English-journalism major and minor the following courses are recommended: history, political science, economics, sociology.

5a-5b. News Writing. (3-3) Yr.
   Lee
   Principles and practice of gathering and writing news. The class will act as reportorial staff for the University newspaper. Prerequisite, English 1b: 5a is prerequisite to 5b.

110a-110b. Copyreading and Editing. (2-2) Yr.
   Lee
   Principles and practice of editing, headline writing, make-up. The class serves as a laboratory for the University newspaper. Two two-hour sessions each week throughout the year. Prerequisite, 5a-5b. Not for graduate credit.

112. Feature Writing. (3) II.
   Lee
   Entertaining and informative type of writing suitable for newspaper publication. Prerequisite, 5a. Offered in 1937-38. Not for graduate credit.

114. Editorial Writing. (3) I.
   O'Connor
   Interpreting the news of the campus, state, and nation by writing various types of editorials. Prerequisite, 5b. Alternate with 115. Offered in 1938-39 and alternate years. Not for graduate credit.

115. History of American Journalism. (3) I.
   Lee
   Development of the American newspaper, news style, editorial practices, place of the newspaper in a democratic society. Not open to Freshmen or Sophomores. Offered in 1937-38. Not for graduate credit.

116. Comparative Journalism. (3) II.
   O'Connor
   Major metropolitan papers in the United States and England, their news and editorial policies, their typography, etc. Prerequisite, 115. Alternate with 112. Offered in 1938-39 and alternate years. Not for graduate credit.

LITERATURE

Introduction to Humanities. (4-4) Yr.
   Fowler, Solve, Schneek
   This course or a survey course in English literature is prerequisite to all upper-division courses in literature. See page 148.

29a-29b. American Literature. (3-3) Yr.
   Lockwood-Muir
   Wide reading of both prose and poetry. 29a is not prerequisite to 29b. Not open to Freshmen or, without special permission, to Seniors. 29a: From colonial days to 1900. Muir. 29b: Contemporary poetry and drama. Lockwood.

126a-126b. Survey of English Literature. (3-3) Yr.
   Staff

127a-127b. The Romantic Movement in English Literature. (3-3) Yr.
   Lockwood-Thrift

129a-129b. Victorian Literature. (3-3) Yr.
   Lockwood-Dudley
130. The English Novel. (3) II.  
Tucker  
The history, structure, and significance of the novel. Readings and papers. Offered in 1937-38 and alternate years.

131a-131b. Shakespeare. (3–3) Yr.  
131a: Introductory Course. The life and times of Shakespeare; rapid reading of several representative plays. Prerequisite, 131a.
131b: A careful study of three plays. Offered in 1937–38 and alternate years.

132a-132b. The Development of English Drama. (3–3) Yr.  
Solve  
132a: Drama developed by the church, the craft guilds, and early professionals; the stimulus of the Renaissance upon the universities and the royal court; the permanent theater and the Elizabethan dramatic companies; the contemporaries of Shakespeare. 
132b: Romantic extravagance and classic restraint in the followers of Shakespeare; the Restoration drama; the eighteenth century, the poetic drama of the early nineteenth century.

134. Modern Drama. (3) I.  
Tucker  
The chief dramatic writers of the last half century.

137. Chaucer. (3) II.  
Hamilton  
The Prologue, selected Canterbury Tales, and some of the minor poems. Emphasis upon Chaucer's narrative skill and upon the historical and social background of his age.

139. Milton. (3) II.  
Dudley  
Selected poetry and prose. Offered in 1937–38 and alternate years.

140. Eighteenth Century Prose. (3) II.  
Tucker  
The literary, social, and political movements of the period. Offered in 1938–39 and alternate years.

142a-142b. The English Lyric. (2–2) Yr.  
Tucker  
A historical study, with some consideration of verse technique. 
142a: The lyric from its beginning to the modern period. 
142b: The modern lyric.

150a-150b. The Literature of the Bible. (2–2) Yr.  
Pattison  
The most notable portions of the Bible, with historical and social backgrounds. 150a is not prerequisite to 150b.

215a-215b. Literary Criticism. (3–3) Yr.  
Pattison  
The theory of criticism. Important critical documents. Preparation of papers applying the principles of criticism. For Seniors and graduate students.

220a-220b. Comparative Literature. (3–3) Yr.  
Solve  
Masterpieces of Europe, showing the growth and interrelations of literary forms, ideas, and moods; their influences upon English literature. For Seniors and graduate students. 
220a: Greek, Roman, and Italian literature. 
220b: Spanish, French, and Germanic literature. Prerequisite, 220a.

238a-238b. Old English. (3–3) Yr.  
Hamilton  
The language, with reading of representative prose and poetry, including a study of Beowulf. Required of all English graduate majors.

240a-240b. Seventeenth Century Prose. (3–3) Yr.  
Pattison

250a-250b. Research and Thesis Writing. (2–2) Yr.  
Patrick  
An introduction to research, including a study of purposes, materials, and methods. A two-hour seminar is supplemented by frequent individual conferences. 250a is recommended for all candidates for the master's degree in English and is open to graduate students in related departments.

The Teaching of English. (3) I.  
Frazier  
For description see Education 197d. Required of students in the College of Education majoring in English.

English Honors. (2–2) Yr.  
For particulars see page 114.
**ENTOMOLOGY AND ECONOMIC ZOOLOGY**

Professors Vorhies (Head of the Department), Ball.
Assistant Professor Wehrle.

Note: The following courses related to entomology and economic zoology are offered through the Department of Zoology. For descriptions, see page 220.

Students in the College of Agriculture desiring to specialize in entomology will register for the entomology and economic zoology major under advice of this department.

101. (Zoology) General Entomology. (4) I. Wehrle
102. (Zoology) Economic Entomology. (4) II. Wehrle
112. (Zoology) Medical and Veterinary Entomology. (3) II. Wehrle
120. (Zoology) Animal Ecology. (3) I. Vorhies
121. (Zoology) Wild Life Management. (3) II. Vorhies
123a-123b. (Zoology) Systematic Entomology. (3-3) Yr. Wehrle
124. (Zoology) Ornithology. (3 to 4) II. Vorhies
125. (Zoology) Mammalogy. (4) II. Vorhies
191a-191b. (Zoology) Elementary Problems. (2 to 4-2 to 4) Yr. Staff
217a-217b. (Zoology) Entomological Research. (2 to 4-2 to 4) Yr. Staff

**FRENCH**

Professors Brown (Head of the Department), Otis.
Associate Professor Tremblay.
Assistant Professors Sougey, Roy.
Instructor Koenig.

The major: 24 units above 1b, including 101a-101b, 105a-105b, 107, 108; Spanish 205a-205b may be included.

The supporting minor should be chosen from: art, classical literature, English, German, history, philosophy, psychology, Spanish.

The teaching minor consists of 15 units above 1b and must include 3a-3b and 5a-5b. Students offering two years of French for entrance must include 101a-101b.

Requirements for the major in Romance languages: 40 units in French and Spanish which must include French 101a-101b, 102a-102b, and Spanish 103a-103b, 109a-109b, and 110a-110b.

Note: French 101, 102, 103, 105, 107, 108 are conducted in French.

1a-1b. Elementary French. (4-4) Yr. Staff
   Grammar, composition, oral practice, and reading. Credit toward graduation in 1a is allowed only after completion of 1b.

3a-3b. Advanced French. (4-4) Yr. Staff
   Review grammar, composition, conversation, reading. Prerequisite, 1a-1b or two years of high school French.
5a-5b. Advanced Composition and Conversation. (3-3) Yr. Tremblay
Composition, lectures, conversation in French on current topics in France. Prerequisite, 3b.

101a-101b. Survey of French Literature Through the Eighteenth Century. (3-3) Yr. Otis
Lectures in French on the history of French literature. Stress on seventeenth century. Prerequisite, 3b.

102a-102b. French Civilization. (3-3) Yr. Roy
Lectures, discussions, reports in French. Racial, social, economic factors from prehistoric times to twentieth century. Prerequisite, 101a-101b.

103a-103b. French Criticism. (2-2) Yr. Tremblay
Historical study of modern critics, their methods and ideas representative of the age, and influential upon contemporaneous and subsequent thought. Lectures, assigned readings, oral and written reports. Prerequisite, 101a-101b or concurrent registration in 101a-101b.

105a-105b. Nineteenth Century and Contemporary French Novel. (2-2) Yr. Brown
Prerequisite, 101a-101b or concurrent registration in 101a-101b.

107. Nineteenth Century and Contemporary French Poetry. (2) I. Brown
Prerequisite, 101a or concurrent registration in 101a.

108. Nineteenth Century and Contemporary French Drama. (2) II. Brown
Prerequisite, 101b or concurrent registration in 101b.

201a-201b. Old French Literature. (3-3) Yr. Otis
Literary and linguistic presentation of French literature to the fifteenth century. Offered in 1938-39 and alternate years.

220a-220b. Seminar. (3-3) Yr. Staff
Subject chosen according to interest and ability of student.

The Teaching of French. (3) II. Roy
For description see Education 197e. Required of students in the College of Education majoring in French.

French Honors. (2-2) Yr.
For particulars see page 114.

GEOLOGY AND MINERALOGY

Professors B. S. Butler (Head of the Department), G. M. Butler, Stoyanow, R. J. Leonard, Short, Guild (Emeritus). Instructor Galbraith.

The major: 24 units in addition to Mineralogy 11 and 12 and Geology 101 or equivalent, which are prerequisites: Geology 102, 103, 104, 106a-106b, 107, 109, 121; Mineralogy 114, 115, 116.

The supporting minor should be chosen from: chemistry, physics, metallurgy, paleontology, mineralogy.

Prerequisites to the major: Chemistry 1a-1b, 3, and 4 or 54; Physics 1a-1b or 17a-17b; Mathematics 20, 24, and 25; Mechanic Arts 1; Civil Engineering 1.

GEOLOGY

1a-1b. General Geology. (4-4) Yr. Leonard
For those who desire a generalized knowledge of the fundamentals of geology. Three lectures and one laboratory period, including field trips. Fee, $3 each semester.
101. Physical Geology. (3) I.  
Leonard  
The principles of dynamic and structural geology. Lectures and laboratory work. Prerequisite, Mineralogy 12. Fee, $4. Not for graduate credit.

102. Historical Geology. (3) II.  
Stoyanow  
The principles of stratigraphy and of organic evolution. Laboratory work. Field trips. Prerequisite, 101. Fee, $5. Not for graduate credit.

103. Ore Deposits. (3) I.  
B. S. Butler  
A study of metalliferous deposits with particular reference to their geological relations and origins. Required of mining engineers. Prerequisites, Mineralogy 12, 114, and Geology 102. Two field trips. Fee, $7.

104. Nonmetalliferous Deposits. (3) II.  
B. S. Butler  
Study of the principal nonmetallic mineral products, including fuels, building materials, etc. Prerequisites, Mineralogy 12, 114, and Geology 102.

105. Field Geology. (3) II.  
Field methods and mapping. Required of mining engineers. Prerequisites, Geology 102, Mineralogy 114, Civil Engineering 1, Mechanic Arts 1. Two field or laboratory periods and one lecture hour. Fee, $12.

106a-106b. Field Exercises. (3-3) Yr.  
Field methods of mapping. Required of geology majors who have not had Geology 111 or equivalent. Prerequisites, Geology 1b or 102, Mineralogy 114, Civil Engineering 1, and Mechanic Arts 1. Two field or laboratory periods and one lecture hour. Fee, $12.

107. Invertebrate Paleontology. (3) I.  
Stoyanow  
Morphology, classification, and geological significance of fossil invertebrates.

108. Geology of North America. (2) I.  
Leonard  
General physiography, stratigraphy, and structural and igneous geology of North America. Prerequisite, 1b or 102. Offered in 1937-38 and alternate years.

109. Geology of Arizona. (2) II.  
Stoyanow  
The physiography, geologic structure, formations, index fossils, and geologic literature of Arizona. Prerequisites, Geology 1b or 102, and 107, Mineralogy 114. Offered in 1938-39 and alternate years.

110. Sedimentation. (3) I.  
Galbraith  
Sources of material, agents of transportation, and methods of deposition of sediments. Two lectures. One laboratory period. Prerequisites, Geology 1a or 101, Mineralogy 12 or 114. Fee, $2. Offered in 1938-39.

112. Physiography. (2) II.  
B. S. Butler  
The evolution and description of land forms. A cultural course for teachers of physiography, geography, or other natural sciences. Prerequisite, 1a.

121. Structural Geology. (2) I.  
B. S. Butler  
The methods of working out and interpreting structure, especially as affecting ore bodies and occurrence of coal, oil, and underground water. Prerequisite, 1a or 101.

122. Petroleum Geology. (2) I.  
Stoyanow  
The fundamental principles of oil geology. Geology of American and foreign oil areas. Prerequisite, 102. Offered in 1937-38 and alternate years.

201a-201b. Ore Deposits of the Rocky Mountains. (2-2) Yr.  
B. S. Butler  
Prerequisites, 103 and 104 or equivalents.

202a-b-c-d. Geology Seminar. (1-1-1-1) Yr.  
B. S. Butler  
Discussion of current literature and special problems.

203a-203b. Advanced Mineral Deposits. (2-2) Yr.  
B. S. Butler  
For graduate students. Arranged to meet needs of students.
DESCRIPTION OF COURSES

203L. Advanced Mineral Deposits Laboratory. (1 to 2) I or II. B. S. Butler
Laboratory work which may be carried in conjunction with 203a or 203b. Fee, $1 per unit.

206. Metamorphic Geology. (2) II. Leonard
Prerequisites, Mineralogy 114 and 115. Offered in 1938-39.

207. Stratigraphical Paleontology. (3) II. Stoyanow
Designed to prepare a student for independent work in paleontology and stratigraphy. Two lectures and one laboratory or field period. Prerequisite, 107. Fee, $5. Offered in 1937-38 and alternate years.

208. Thesis and Research. (1 to 4) I or II. Staff
Problems in geology and mineralogy. Fee, $1 per unit of laboratory work. Open to Seniors by special permission.

MINERALOGY

11. Crystallography and Blowpipe Analysis. (3) I. G. M. Butler-Leonard
Study of crystal form of minerals and mineral determination by blowpipe methods. Prerequisite, Chemistry 1b or 2b. Fee, $5. Each student must provide himself with a hand lens.

12. Determinative Mineralogy. (3) II. Leonard-Galbraith
Emphasis upon identification of minerals by physical characteristics. Prerequisite, 11. Fee, $5.

113. Advanced Determinative Mineralogy. (2) I. Galbraith
Application of the various methods of mineral determination. Prerequisite, 12. Fee, $5.

114. Petrology. (2) II. G. M. Butler-Leonard
The characteristics of the more common rocks and their field identification. Prerequisite, 12.

115. Optical Mineralogy. (3) I. Short
The microscopic study of the rock-forming minerals. Prerequisites, Geology 1b or Mineralogy 12, Chemistry 4 or 54, and Physics 1b or 17b. Physics 106 is recommended. Fee, $2.50.

116. Petrography. (2) II. Short
The preparation and study of thin sections of rocks. Prerequisites, 114 and 115. Fee, $2.50.

205. Crystallography. (1 to 4) I or II. Short
Measurements, projection, and drawing of crystals. Prerequisites, Mineralogy 115 and Mathematics 25. Fee, $2.50.

209. The Microscopic Study of Opaque Minerals. (1) I. Short
Methods of identification and paragenesis of ore minerals by means of the reflecting microscope. Prerequisites, Mineralogy 12 and Geology 103. Fee, $2.50.

210. Paragenesis of Silicate Minerals. (3) II. Short
A lecture course on the classification, origin, and geologic significance of the silicate minerals. Prerequisites, Mathematics 25, Mineralogy 115, and Chemistry 4 or 54. Chemistry 106b is recommended. Offered in 1938-39.

211. Advanced Opaque Microscopy. (2) II. Short
Identification of ore minerals and microscopic study of suites of ore specimens from representative mining districts. Prerequisite, 209. Fee, $5.

212. Advanced Petrography. (2) I. Short
The petrography of sedimentary and metamorphic rocks. A laboratory course with occasional lectures. Prerequisite, 116. Fee, $2.50. Offered in 1937-38 and alternate years.
GERMAN

Professors Kurath (Head of the Department), Carrington. 
Instructor Mundinger.

The major: 24 units above 1b, including 16 upper-division units.
The supporting minor should be chosen from: classical literature, French, history, philosophy, Spanish.
The teaching minor consists of 15 units above 1b and must include 3a-3b, and 100a or 103a. Students offering two years of German for entrance must include 5a-5b.

1a-1b. First-Year German. (4-4) Yr. Kurath-Mundinger
Grammar, pronunciation, class and collateral reading. Credit toward graduation in 1a is allowed only after completion of 1b.

3a-3b. Second-Year German. (4-4) Yr. Carrington-Kurath
Grammar review, simple composition and conversation, class and collateral reading of modern literary texts.

5a-5b. Composition and Conversation. (2-2) Yr. Kurath
Training in writing and speaking simple German accurately.

100a-100b. Survey of German Literature to 1750. (3-3) Yr. Kurath
Class and collateral reading of literary masterpieces, lectures in German on background material. Prerequisite, 3b.

103a-103b. Survey of Classical German Literature. (3-3) Yr. Kurath
Prerequisite, 3b.

104a-104b. Wagner as a Dramatist. (2-2) Yr. Carrington
Wagner's music dramas. Prerequisite, three years, or in exceptional cases two years, of college German. Offered in 1937-38 and alternate years.

107a-107b. Goethe's Faust, Parts I and II. (2-2) Yr. Carrington
The genesis of the work and its relation to Goethe's life. Prerequisite, the same as for 104a-104b. Offered in 1938-39 and alternate years.

108a-108b. Scientific German. (2-2) Yr. Carrington
Prerequisite, 3b, or in exceptional cases, 3a. Not for graduate credit.

German Honors. (2-2) Yr.
For particulars see page 114.

GREEK
(See Department of Classical Literature)

HISTORY AND POLITICAL SCIENCE

Professors Hubbard (Head of the Department), Wedel, Houghton.
Assistant Professors Waltz, Ewing.

HISTORY

The major: 24 units including History 1a-1b or 11 and 12 or 17a-17b; also 16 units of upper-division work.
The supporting minor should be chosen from: economics, political science, foreign languages, English, philosophy.
The teaching minor must include 1a-1b, 17a-17b, and additional courses to total at least 15 units.
Note: On the completion of History 1a-1b or 11 and 12 or 17a-17b as introductory courses, or Political Science 51 and 62, upper-division courses may be chosen.

Social Science Survey. (3-3) Yr. Wedel, Brown, Harvill
General interdepartmental course, see page 148.

1a-1b. Expansion of the American People. (3-3) Yr. Reed
Political and social development from 1776; the westward movement; the development of western democracy; social and political changes following the Civil War; settlement of the Far West. Open to all students. Two lectures and one quiz section.

11. Development of the English Nation. (3) I. Hubbard
The influence of church and continental relations; development of English social and political institutions to the end of the Tudor period.

Social, political, and economic history since 1603.

17a-17b. General European History. (3-3) Yr. Wedel
The social, economic, and political development of Europe. For those who have not had a general course in high school.

103a-103b. Medieval History. (3-3) Yr. Hubbard
From the fall of the Roman Empire in the West to the Reformation; origin and development of European states, and of social and political institutions. Offered in 1938-39 and alternate years.

105a-105b. Nineteenth Century Europe. (3-3) Yr. Hubbard
The liberal reform movement of Europe; the evolution of constitutional government; various movements toward national unity. Offered in 1937-38 and alternate years.

109. Greek History. (3) I. Hubbard
Greece to the death of Alexander. The political, social, and economic life of the Greek people. Offered in 1937-38 and alternate years.

110. Roman History. (3) II. Hubbard
To the fall of the Empire. The organization of the Republic and the Empire; the social and economic development of the people. The relation of Rome to the Mediterranean world. Offered in 1937-38 and alternate years.

113a-113b. Modern Europe. (3-3) Yr. Hubbard
From the beginning of the Reformation to the Napoleonic period, including an intensive study of the French Revolution. Offered in 1938-39 and alternate years.

117a-117b. Constitutional History to the Civil War. (2-2) Yr. Ewing
Origin and development of the constitution. One purpose is to direct the student to collect and organize source material. Open only to students having had 1a-1b. Offered in 1938-39 and alternate years.

119a-119b. Later History of the United States. (2-2) Yr. Ewing
The United States since the Civil War. Open only to students having had 1a-1b. Offered in 1937-38 and alternate years.

121. The Latin-American Colonies. (2) I. Ewing
Survey of Spanish institutions and culture, in discovery, exploitation, and settlement of Latin America; social organization, economic conditions, and the struggle for independence.

122. The Latin-American Republics. (2) II. Ewing
Progress toward stability, prosperity, and international recognition; geography and resources; social, political, and financial situation.

130a-130b. The History of the West. (3-3) Yr. Ewing
The settlement and development of the West, and its influence upon national and international affairs at each stage. Emphasis on the Trans-Mississippi West.
205a-205b. Problems in History. (2 to 4-2 to 4) Yr.  
Staff  
Open only to graduate students, with privilege of repetition upon change of subject matter. Students admitted upon consent of department. Definite requirements as to lectures, reading, or research.

210a-210b. Seminar. (2 to 4-2 to 4) Yr.  
Staff  
Advised for students taking a major in history and political science. For Seniors and graduate students.

215a-215b. The Twentieth Century. (2-2) Yr.  
Wedel  
International relations before 1914; the causes and results of the wars of the century; the Russian Revolution; the new Europe. For Seniors and graduate students, and others with the consent of the instructor.

238a-238b. Central Europe. (2-2) Yr.  
Wedel  
The rise of central European states, the attempt to create a unified state, the conflict among them, the gradual victory of the North, and the results of this victory.

The Teaching of Social Science. (3) I.  
Schmidt  
For description see Education 197f. Required of students in the College of Education majoring in history.

History Honors. (2-2) Yr.  
For particulars see page 114.

POLITICAL SCIENCE

The major: 24 units, 16 of which must be upper-division courses. The supporting minor should be chosen from: economics, history, modern or ancient languages, and must include History 1a-1b or 11, 12, or 17a-17b.

51. National Government of the United States. (3) I.  
Houghton-Waltz  
The Constitution and its amendments; the structure of the federal government; distribution of powers. Not open to Freshmen.

62. State and County Government. (3) II.  
Houghton-Waltz  
The organization and functions of state and county government; some special reference to Arizona. Not open to Freshmen.

100. National and State Constitutions. (3) II.  
Houghton-Waltz  
Devised to meet the state requirements for a teacher's certificate. For Seniors intending to teach. Not open to students having had 51 or 62. Not for graduate credit.

131a-131b. European Governments. (3-3) Yr.  
Wedel  
Governments of England and Continental Europe.

153. Municipal Government. (2) I.  
Waltz  
Governments of American cities. Offered in 1937-38 and alternate years.

Houghton  
Position of parties in American government. Offered in 1938-39 and alternate years.

155. American Foreign Policy. (3) I.  
Houghton  
Analytical history of American foreign policies. Offered in 1937-38 and alternate years.

156. International Law. (3) II.  
Houghton  
Origin and development of international law.

164. International Relations. (3) I.  
Waltz  
Forces which have led to the development of international co-operation and international government. Arbitration, the League of Nations, and the World Court. Offered in 1938-39 and alternate years.
165. Principles of Constitutional Law. (3) II. Houghton
  Judicial interpretations of the state and national constitutions. Scope of
  the powers and limitations of Congress and the state legislatures.

171. National Administration. (3) I. Waltz
  Development, organization, and functions of the national administrative
  agencies. Merit system of appointment.

182. State and Local Administration. (3) II. Waltz
  Development, organization, and functions of state and county administra-
  tive agencies. Movement for reorganization. Some special application to
  Arizona.

203a-203b. Advanced Political Theory. (3-3) Yr. Houghton
  Evolution of European and American political doctrines with emphasis
  upon the forces producing the doctrines. Prerequisite, 6 units in upper-
  division history or political science.

207a-207b. Problems in Political Science. (2 to 6-2 to 6) Yr. Houghton-Waltz
  Open only to graduate students with privilege of repetition upon change
  of subject matter.

Political Science Honors. (2-2) Yr.
  For particulars see page 114.

HOME ECONOMICS

Professors Johnson (Director of the School), Smith.
Associate Professors Ranney, Jones.
Assistant Professors Lynott, Wood, Garrison.

FOODS AND NUTRITION

1. Selection and Preparation of Foods. (3) I. Lynott
  Selection of foods and food combinations. Chemical changes occurring in
  cooking. Methods of food preparation and underlying principles. One lecture
  and two three-hour laboratory periods. Laboratory fee, $5. Concurrent
  registration with Chemistry 1a or 2a.

2. Introduction to Nutrition. (2) I or II. Smith-Garrison
  Selection of an adequate diet for health. The requirements of the body
  for energy, protein, minerals, and vitamins. Demonstrations of animal-
  feeding experiments. Required of physical education and home economics
  majors, elective for others. No prerequisites. Two lectures. For men and
  women.

3. Food Preparation. (2) II. Lynott
  For non-home-economics students. Food purchasing, selections, and prep-
  aration. Meal planning and economical food management. No prerequisites.
  Two three-hour laboratory periods. Laboratory fee, $5.

11. Meal Planning. (3) II. Lynott
  Problems of food management: purchasing and costs, selection, preparation,
  and serving. Service for family meals and special occasions. Prerequisite, I.
  One lecture and two three-hour laboratory periods. Laboratory fee, $5.

13. Camp Cookery (for Men). (1) I. Lynott
  The selection and preparation of foods for camps. Practical work in the
  laboratory and out-of-doors. One three-hour laboratory period a week.
  Laboratory fee, $3.

102. Nutrition and Dietetics. (4) I. Garrison
  Fundamental principles of human nutrition. Food requirements of adults,
  children, and infants. Application in planning of dietaries. Prerequisites,
  Chemistry 40 or 103 and Home Economics 1. Two lectures and two three-hour
  laboratory periods. Laboratory fee, $5. Not for graduate credit.
102R. Nutrition and Dietetics. (2) I. Garrison
   Same as 102, but taken without laboratory by non-major students. Prerequisites, Chemistry 40 or 103 and Zoology 57 or 144. Not for graduate credit.

111. Institution Cookery and Equipment. (3) II. Wood
   Construction and operation of equipment for lunch rooms and cafeterias. Problems involved in selection, preparation, and serving of food in quantity. Prerequisites, 102 and 131. One lecture and two three-hour laboratory periods. Laboratory fee, $2.50. Not for graduate credit.

112. Nutrition Work with Children. (3) II. Garrison
   Standards of judging nutrition. Cause and effect of malnutrition and methods of combating it. Teaching nutrition to children in public schools. Prerequisite, 102. One lecture, one conference hour, and one three-hour laboratory period. Laboratory fee, $2.50.

111. Readings in Nutrition. (2) II. Garrison
   Readings and reports. Two conference hours. Prerequisite, 102.

131. Experimental Cookery. (3) I. Lynott
   Cooking processes as affected by temperature, altitude, preparation and manipulation of ingredients. One lecture, two three-hour laboratory periods. Prerequisites, Chemistry 40 or 103a and Home Economics 11. Laboratory fee, $5. Not for graduate credit.

132. Diet in Disease. (3) II. Garrison
   Adaptation of diet to disorders of nutrition. Two lectures and one three-hour laboratory period. For Seniors and graduate students. Prerequisite, 102. Laboratory fee, $2.50.

141. Institution Organization and Administration. (3) I. Wood
   A study of the principles of organization and management applied to the problems of housing and feeding institution groups. Not for graduate credit.

201. Laboratory Methods in Food Analysis. (3) II. Garrison
   Chemical methods of testing foods for energy value, vitamins, minerals, pigments, etc. One lecture and six laboratory hours. Prerequisites, Home Economics 131, Chemistry 54, 103b, or their equivalent. Offered in 1938-39 and alternate years. Laboratory fee, $5; breakage deposit, $2.

212. Laboratory Methods in Human Metabolism. (3) I. Garrison
   Modern methods of chemical diagnosis, including balance studies, qualitative and quantitative examination of gastric contents, urine, feces. One conference hour and six laboratory hours. Prerequisites, Home Economics 201, Chemistry 115, or their equivalent. Laboratory fee, $5; breakage deposit, $2.

222. Seminar in Nutrition. (2-2) Yr. Smith
   Reviews and interpretations of the literature in this field emphasizing recent advances. Oral and written reports. Prerequisite, fundamental work in nutrition and related sciences.

231. Problems in Experimental Cookery. (2 to 4) I or II. Garrison
   Conferences and individual laboratory work. For Seniors and graduate students. Prerequisite, 131. Hours to be arranged. Laboratory fee, $7.50.

232a-232b. Laboratory Methods in Animal Feeding. (2-2) Yr. Smith
   Methods of care and breeding of laboratory animals; quantitative measurement of vitamin content of foodstuffs, studies in nitrogen and mineral metabolism, etc.; introduction to research problems. Open to graduate students. One conference hour a week and laboratory daily. Prerequisite, 102. Laboratory fee, $2.50 each semester.

242. Field Work in Nutrition. (2) I or II. Garrison
   Practical nutritional problems among families in the community. One conference hour and one laboratory in the field. Prerequisite, 102. Laboratory fee, $2.50.

252. Research in Nutrition. I or II. Smith
   Candidates for the master's degree are required to present a thesis based upon research work. Research problems will be assigned to qualified students. Credits proportionate to problem involved. Fee, $2 per unit.
262. Basal Energy Metabolism. (2) I. Garrison
Measurement of energy metabolism in the human body with special attention to the recent studies in the field. Practice in the use of the respiration apparatus and a special problem involving some factor which may influence metabolism. Prerequisite, 102. One lecture hour per week and three one-hour laboratory periods. Laboratory fee, $2.

TEXTILES, CLOTHING, AND RELATED ART

33. Clothing Construction. (2) I. Ranney
For non-home-economics students. The construction of clothing from the standpoint of beauty, hygiene, and cost; a working knowledge of commercial patterns. Two three-hour laboratory periods. Laboratory fee, $1.

44. Clothing: Fundamental Principles. (3) II. Ranney
The fundamental principles governing the designing, cutting, and fitting of garments in washable materials. A foundation pattern is used as a basis for flat-pattern designing. Prerequisite, 45. One lecture and two three-hour laboratory periods. Laboratory fee, $2.

45. Costume Selection. (2) I or II. Ranney
Principles of design and color as they relate to dress and personal appearance; fabric selection and clothing budgets. Required of home economics majors, open to non-majors first semester only. Two lectures.

64. Costume Draping. (3) I. Ranney
The planning and draping of costumes for different occasions and for different types of individuals. Prerequisite, 44. One lecture and two three-hour laboratory periods. Laboratory fee, $2.

94. Textiles. (2) II. Ranney
The study of textile fibers and their manufacture into fabrics; special consideration of economic, legal, and social aspects of the textile industry. Required of textile and clothing majors; recommended for students in business administration who are preparing for department-store work. Two lectures.

104. Buying Textiles and Clothing. (3) I. Ranney
Study of types and qualities of raw materials, their construction, special brands, standardization; rayon, knitted wear, gloves, shoes, and furs. Prerequisite, 94. Recommended for business administration students.

115. Home Furnishings. (3) II. Jones
Interiors and the selection and arrangement of furnishings from the standpoint of beauty and economy. Prerequisite, Art 1a. Two discussion periods and one three-hour laboratory period. Not for graduate credit.

125. History of Costume. (3) I. Ranney
Period costume as an expression of the artistic, social, and historic life of the time; of special interest to students of dramatics and pageantry. Prerequisite, History 17a or 17b. Offered in 1937-38 and alternate years.

135. History of Furniture and Decorative Textiles. (3) I. Ranney
A study of period furniture and decorative fabrics and their influence upon modern furniture and materials. Three lectures. Offered in 1937-38 and alternate years. Prerequisite, History 17a or 17b.

144. Clothing: Special Problems. (2) II. Ranney
Special problems in clothing depending on need and interest of student, as children's clothing, tailoring, designing, and modeling. Prerequisite, 64. Two three-hour laboratory periods. Laboratory fee, $2. Not for graduate credit.

145. Costume Design. (2) I. Ranney
Art in dress; the application of the principles of color, harmony, and design; individual requirements in color and line. Prerequisites, Home Economics 43 and Art 1a. One lecture and one three-hour laboratory period. Not for graduate credit.

154. Recent Developments in the Textile Field. (2) II. Ranney
Readings, reports, and discussions based on the current literature and research being done in the textile and clothing field. Prerequisite, 104. Two lectures. Offered in 1937-38 and alternate years.
164. Clothing: Social and Economic Aspects. (2) I. Johnson
A consideration of the social, economic, and psychological aspects of clothing. Offered in 1937-38 and alternate years. Recommended antecedent course, Psychology 15.

194. Textile Analysis. (2) I. Ranney
Physical testing of fabrics to enable a comparison of similar fabrics on the basis of fabric properties being measured. For majors in Textiles and Clothing. One lecture and one three-hour laboratory. Offered in 1937-38 and alternate years.

HOUSEHOLD ADMINISTRATION

96. Budgeting Problems. (2) I. Johnson
For social workers and others interested in problems of budgeting low incomes. Offered in 1938-39 and alternate years.

106. Economics of the Household. (2) I. Johnson
Analysis of the economic problems of the family; problems of income, expenditure, and production. Prerequisite, Economics 1a. Open to men and women. Two discussion periods. Not for graduate credit.

116. Home Management. (4) II. Lynott
A critical analysis of the uses of time, energy, and household equipment. Standards for effective management and enriched home living. Laboratory work consists of six weeks residence in the home management house with practical experience in food buying, meal planning, serving, housekeeping, hospitality, and group relations. Senior standing. Not for graduate credit.

146. The Consumer and the Market. (3) II. Johnson
Market structure and functions; consumer buying problems under existing market conditions. Open to Junior and Senior men and women. Three discussion periods. Prerequisite, Economics 1a.

156. Housing Problems. (2) I. Johnson
Survey of present housing conditions from the standpoint of adequacy in meeting the requirements of wholesome family living. Not for graduate credit.

FAMILY LIFE

127. Child Development. (3) I or II. Jones
Discussion of all phases of care and development of the preschool child. Prerequisite, Psychology 1a. During the nine weeks the University Nursery School is in session, three hours of laboratory work a week will be substituted for one discussion period. For men and women. Class limited to 20. Not for graduate credit.

137. The Family. (3) II. Johnson
A survey of the family as a changing institution; an analysis of the problems of the modern family. For Junior and Senior men and women. Three discussion periods.

227. Problems in Child Development. (3) I or II. Jones
Study of environmental influences on child behavior; review of recent research in the field. Prerequisites, Home Economics 127 and Psychology 112. For men and women graduate students.
DESCRIPTION OF COURSES

HOME ECONOMICS EDUCATION

For description see Agricultural and Home Economics Education, page 149.

HORTICULTURE

Professor Kinnison (Head of the Department).
Associate Professor Finch.

1. Principles of Horticulture. (2) II.  
   Finch  
   Propagation, planting, and culture of orchard, garden, and ornamental plants; their use on the city, suburban, and farm homesite. One lecture and one three-hour laboratory period. Prerequisite to all upper-division courses in horticulture. Laboratory fee, $2.

101. Subtropical Horticulture. (2) II.  
     Kinnison  
     Subtropical fruits of commercial importance in the Southwest, including the persimmon, walnut, pecan, avocado, fig, olive. Two lectures. Prerequisites, Horticulture 1, Botany 103. Offered in 1937-38 and alternate years.

102. Commercial Horticulture. (3) I.  
     Finch  
     The commercial production of fruit crops, including grading, packing, storing, and orchard management. One Saturday field trip. Two lectures and one three-hour laboratory period. Laboratory fee, $2. Prerequisites, Horticulture 1, Botany 103. Offered in 1937-38 and alternate years.

103. Truck Farming. (3) II.  
     Kinnison  
     The commercial growing, harvesting, and marketing of vegetable crops in Arizona; cultural practice, environmental adaptation and nutritional requirements. Laboratory fee, $3. Prerequisite, 1. Offered in 1938-39 and alternate years.

104. Systematic Pomology. (3) I.  
     Finch  
     The principles underlying pomological nomenclature, variety description, classification, adaptation, and fruit judging are covered. Two lectures and one three-hour laboratory period. Laboratory fee, $3. Required of majors in horticulture. Prerequisite, Botany 4. Offered in 1938-39 and alternate years.

105. Landscape Gardening. (3) II.  
     Kinnison  
     The principles of landscape art with reference to beautifying homes, school grounds, and park areas; characteristics of ornamentals. Two lectures and one three-hour laboratory period. Laboratory fee, $2.50. Offered in 1938-39 and alternate years. Prerequisites, Horticulture 1, Botany 4. Not for graduate credit.

106. Date Culture. (2) I.  
     Kinnison  
     The propagation, growing, harvesting, processing, and marketing of the date. Two lectures. Offered in 1937-38 and alternate years. Prerequisites, Horticulture 1, Botany 103.

107. Grapes and Small Fruits. (3) II.  
     Kinnison  
     Grapes and small fruits, with reference to climatic, soil, and water requirements; variety adaptation and cultural practices. Two lectures and one three-hour laboratory period. Laboratory fee, $3. Offered in 1937-38 and alternate years. Prerequisites, Horticulture 1, Botany 103.

108. Citriculture. (3) I.  
     Kinnison  
     A consideration of factors influencing commercial production of citrus fruits in Arizona; climatic, soil, soil moisture, and nutritional requirements and responses. Three lectures. Offered in 1938-39 and alternate years. Prerequisites, Horticulture 1, Botany 103.

     Staff  
     Problems encountered in commercial orchard and truck farm management. Field trips to the more important horticultural districts of the state. Required of all majors in horticulture. Transportation to be taken care of by individual students or on the mileage basis. Not for graduate credit.
110. Physiology of Fruiting in Horticultural Plants. (2) II. Finch
   A consideration of physiological processes underlying practical problems
   of plant growth, of blossoming, setting of young fruits, size and quality
   of fruits. Two lectures. Prerequisites, Horticulture 1 and Botany 103. Offered
   in 1937-38 and alternate years.

201. Seminar in Horticulture. (1) II. Staff
   Readings of literature in horticulture. Required of Seniors and graduate
   students in horticulture.

202. Research in Horticulture. (2 to 4) I or II. Staff
   Special work under the professor in charge. For graduate students.

ITALIAN
   (See Department of Spanish)

LATIN
   (See Department of Classical Literature)

LAW

Professors Fegtly (Dean of the College), Curtis, McCormick, C. H. Smith,
   Thomas.

Lecturer in Law Pickett.

2a-2b. Contracts. (3-3) Yr. McCormick
   Formation, performance and discharge of contracts; parties affected by
   contracts; illegal contracts. Williston's Cases on Contracts (Third Edition).

5. Agency. (3) II. Thomas
   The creation and character of the agency relation and the rights, duties,
   and liabilities attendant thereupon. Steffen's Cases on Agency.

6. Property—Personal Property. (2) I. Thomas
   Distinction between real and personal property and the law governing
   rights in personal property. Bigelow's Cases on Personal Property (Second
   Edition).

7. Property—Rights in Land. (3) II. Smith
   Easements; covenants running with the land; public rights; franchises;
   rents. Bigelow's Cases on Rights in Land.

8. Criminal Law. (3) I. Smith
   Criminal procedure, nature and elements of crime, specific crimes, de-

9a-9b. Pleading and Procedure. (2-2) Yr. Thomas
   A study of pleading and court procedure; common law forms of action; the
   development of equity; reforms under the code system. Clark's Cases on
   Pleading and Procedure (One-Volume Edition).

41a-41b. Torts. (3-3) Yr. Fegtly
   Damage, causation, and excuse in the law of torts. Wigmore's Cases on
   Torts.

101. Legal Bibliography. (1) II. Thomas
   A study of and training in fact situation analysis and in the use of law
   books for the solution of the legal problems thereby produced. Eldeman's How
   to Find the Law (Second Edition) and selected material.

103. Trial Practice. (2) I. Thomas
   A study of the progressive steps in trial procedure leading to judgment.
   McBaine's Cases on Civil Procedure, Part III.
107. Domestic Relations. (2) I. Thomas
The law applicable to problems incident to marital and family relations. Madden's *Cases on Domestic Relations*. Offered in 1938-39 and alternate years.

109. Legal Ethics. (2) II. Fickett
Ethics of the legal profession as applied to the practice of law. Arant's *Cases on Legal Ethics*.

110a-110b. Equity. (3-3) Yr. McCormick
The nature and scope of equity jurisdiction; injunctions; specific performance of contracts; reformation and rescission. Cook's *Cases on Equity* (Second One-Volume Edition).

118a-118b. Evidence. (3-3) Yr. Fegty

121. Sales. (3) I. Thomas
The law governing sales of personal property. Williston and McCurdy's *Cases on Sales*. Offered in 1937-38 and alternate years.

124. Public Utilities. (3) II. McCormick

125. Bills and Notes. (3) II. Fegty

126. Partnership. (2) I. Smith
The organization, operation, and dissolution of partnerships and the rights, duties, and obligations incident thereto. Crane and Magruder's *Cases on Partnership*, Shorter Selection. Offered in 1938-39 and alternate years.

127. Credit Transactions. (3) I. Smith
Accommodation contracts, mortgages, pledges, conditional sales, dealers' financing, use of credit, security holders' remedies. Sturges' *Cases on Credit Transactions*. Offered in 1937-38 and alternate years.

129. Water Rights. (2) II. McCormick
Riparian rights; the doctrine of prior appropriation of the western states; underground waters; interstate streams. Bingham's *Cases on Water Rights*. Offered in 1938-39 and alternate years.

130. Mining Law. (2) II. Fegty

136. Trusts. (3) II. Smith

139. Property—Title to Real Property. (3) I. Smith
Creation, acquirement, and conveyance of title to land. Aigler's *Cases on Title to Real Property* (Second Edition).

140. Property—Wills and Administration. (3) II. Smith
Execution, revocation and revival of wills, and administration of testate and intestate estates. Costigan's *Cases on Wills and Administration* (Second Edition).

143a-143b. Constitutional Law. (3-3) Yr. Curtis

145. Practice Court. (3) II. Thomas
Training in the activities necessary and incidental to the trial of cases. Prerequisites, 9a-9b, 101, 103, 118a-118b.

147. Private Corporations. (3) I. McCormick
149. Property—Future Interests. (3) I. Fegly
   The various future estates in real and personal property and the law applicable thereto. Kale’s Cases on Future Interests, American Case Book Series.

150. Creditors’ Rights. (3) I. Fickett
   Enforcements of judgments, fraudulent conveyances, assignments for benefit of creditors, creditors’ bills, receiverships, and bankruptcy. Hanna’s Cases on Creditors’ Rights (Second Edition).

MATHEMATICS

Professor Leonard (Head of the Department).
Associate Professors Graesser, Shaw, Boldyreff.
Assistant Professors Miller, Mewborn, Purcell.
Instructor Picard.

The major: 24 units, including 100a-100b, and a thesis; 16 units must be upper-division work.
The supporting minor shall consist of 20 units advised from: astronomy, biology, chemistry, economics, geology, metallurgy, mineralogy, philosophy, physics.
The teaching minor must include: 20 or 22, 24, 25, and additional courses to total at least 15 units.

Note: Students who present their entrance credits in algebra and find that they are unable to carry successfully a college course in algebra are expected to take a semester course in sub-collegiate mathematics (Mathematics X) five hours a week, Monday to Friday, without credit.

10. Solid Geometry. (3) I. Mewborn
   For those who are planning to specialize in mathematics. Not open to those who presented solid geometry for entrance. Prerequisite, 1 entrance credit in plane geometry.

20. College Algebra. (3) I or II. Staff
   Prescribed for all engineering courses. Prerequisite, 1½ entrance credits in algebra.

22. Special College Algebra. (3; and ½ entrance credit) I or II. Staff
   For students who wish to take courses in the College of Mines and Engineering or advanced courses in mathematics. Five hours per week. Prerequisite, 1 entrance credit in algebra.

24. Plane Trigonometry. (2) I or II. Staff
   Prescribed for all engineering courses. Prerequisites, 1½ entrance credits in algebra and 1 entrance credit in geometry.

25. Analytic Geometry. (4) I or II. Staff
   Prescribed for all engineering courses. Prerequisites, 1½ entrance credits in geometry and Mathematics 20 and 24.

69a-69b. Mathematics of Commerce. (2-2) Yr. Staff
   Prescribed in School of Business and Public Administration. Prerequisites, 1 entrance credit in algebra and 1 entrance credit in plane geometry.

70a-70b. Mathematics for Business and Theory of Investments. (4-4) Yr. Boldyreff-Leonard
   70a: Prerequisites, 1 entrance credit in algebra and 1 entrance credit in plane geometry. A section of 70a the second semester is modified for students of agriculture.
   70b: The theory of interest and annuities with its application to financial problems and practice in the use of tables of the compound interest functions. Prerequisites, 70a or 20 or 22, and a knowledge of logarithms.

81. Calculations. (1) I or II. Graesser-Mewborn
   Application of approved methods for calculating, including the use of the slide rule. Prescribed for all engineering courses. Prerequisites, 20 and 24. Intended to supplement 24 and to accompany 25. Students desiring credit for a similar course will be required to give a satisfactory demonstration of their skill.
100a-100b. Calculus. (4-4) Yr. Boldyreff-Graesser-Shaw
Fundamental principles of the calculus, with their applications to geometry, physics, and mechanics. May be started either semester. Prescribed for all engineering courses. Prerequisite, 25.

103. Elementary Statistics. (4) II. Graesser
The introductory course and prerequisite for each of the specialized courses given by the several departments. Prerequisite, 70a or 20 or 22 or 69a.

112a-112b. Analytical Mechanics. (3-3) Yr. Leonard
The mathematical treatment of the fundamental principles of dynamics, statics, etc. Some attention given to graphical methods. Prescribed for all engineering courses. Prerequisites, Mathematics 100b and Physics 1a.

120. Analytical Geometry of Space. (2) I. Purcell
This first course includes the subjects usually treated in rectangular coordinates. Prerequisite, 25. Offered in 1938-39 and alternate years.

126. Advanced Algebra. (2) I. Shaw
A sequel to 20 or 22. Prerequisite, 20 or 22. Offered in 1937-38 and alternate years.

161. Spherical Trigonometry. (2) II. Purcell-Shaw
Fundamental principles with application to surveying and astronomy. Prerequisite, 10 or ½ entrance credit in solid geometry and 24. Offered in 1938-39 and alternate years.

191a-191b. Theory of Statistics. (3-3) Yr. Graesser
Averages, dispersion, theory of sampling, correlation and curve fitting. Prerequisites, 100a and 103. With the consent of the instructor 191b may be taken without 191a. Offered in 1938-39 and alternate years.

200a-200b. Advanced Calculus. (3-3) Yr. Graesser-Boldyreff
A standard second-year course in calculus. Prerequisite, 100b. Offered in 1937-38 and alternate years.

221. Theory of Functions of a Complex Variable as Applied to Electrical Engineering. (2) II. Shaw-Leonard
The complex quantity in electrical engineering problems. Prerequisites, Mathematics 250 and Electrical Engineering 100a. Offered in 1938-39 and alternate years.

221a-221b. Theory of Functions of a Complex Variable. (3-3) Yr. Graesser
Calculus of complex numbers; elementary functions; conformal mapping; linear fractional transformations; infinite series. Prerequisite, 100b. Offered in 1938-39 and alternate years.

226. Theory of Equations. (3) II. Shaw
Prerequisite, 126. Offered in 1937-38 and alternate years.

240. History of Mathematics. (3) I. Shaw
The development of this branch of exact science. Prerequisite, 100b. Offered in 1937-38 and alternate years.

250. Ordinary Differential Equations. (3) II. Graesser-Boldyreff
An elementary study of differential equations and their applications. Prerequisite, 100b. Offered in 1938-39 and alternate years.

261a-261b. Theory of Infinite Series. (3-3) Yr. Shaw
Infinite series and products, infinite continued fractions, infinite integrals, asymptotic series, and higher transcendental functions. Prerequisite, 100b. Offered in 1938-39 and alternate years.

261. Theory of Numbers. (2) II. Shaw
Selected topics. Prerequisite, 100b. Offered in 1937-38 and alternate years.

292a-292b. Calculus of Finite Differences. (3-3) Yr. Shaw
Fundamental theorems and applications including differencing, interpolation, finite integration, approximate summation, and difference equations. 100b is a prerequisite for 292a; 250 and 292a, for 292b. Offered in 1938-39 and alternate years.
299. Seminar in Mathematics. (1 to 4) I or II.  Staff

Among the lines that may be developed: Theoretical Mechanics (Leonard); Theory of Probability (Graisser); Theory of Functions of a Complex Variable (Graisser); Higher Plane Curves (Purcell); Partial Differential Equations (Boldyreff); Higher Algebra (Shaw); Vector Analysis (Boldyreff); Differential Geometry (Boldyreff); Introduction to Higher Geometry (Purcell); Geometry on the Algebraic Curve (Purcell); Cremona Transformations (Purcell); Harmonic Functions (Boldyreff); Select Topics in Advanced Calculus (Boldyreff). Open to graduate students and also to Seniors with consent of the instructor.

The Teaching of Mathematics. (3) II.

For description see Education 197i. Required of students in the College of Education majoring in mathematics.

Mathematics Honors. (2-2) Yr.

For particulars see page 114.

MECHANIC ARTS

Professor Darrow (Head of the Department).
Instructor Currie.

1. Engineering Drawing. (3) I or II.  Jimerson

Elements of mechanical drawing. Required of all engineering students. Three drafting periods. Fee, $1.50.

2. Descriptive Geometry. (3) II.  Jimerson

Elements of descriptive geometry. Required of all engineering students. Prerequisite, 1 or equivalent. Recitation and two drafting periods. Fee, $1.50.

3. Pattern Making. (2) I.  Darrow-Currie

Bench and machine work in wood, elements of pattern making, and lectures on foundry work. Two laboratory periods. Fee, $6; deposit, $3.

4. Forge Work. (2) II.  Darrow-Currie

Forge work in iron and steel; including tool making, hardening, tempering, case hardening, and annealing. Characteristics of iron and steel. Two laboratory periods. Fee, $6; deposit, $3.

31. Advanced Engineering Drawing. (3) I or II.  Jimerson

For engineering students who have had one year of mechanical drawing. Similar to, but more advanced than Mechanic Arts 1. Three drafting periods. Fee, $1.50.

33. Mechanical and Geological Drawing. (2) I or II.  Jimerson

For students majoring in geology, elementary mechanical drawing, block diagrams, and map drawing. Two drafting periods. Fee, $1.50.

105a-105b. Machine Shop Laboratory. (2 to 4-2 to 4) Yr.  Darrow

Machine shop practice; care of machinery; machine tools; modern industrial practice. Prerequisite, 4. Two laboratory periods. Fee, $3 per unit per semester; deposit, $3. Not for graduate credit.

106a-106b. Advanced Metal Working. (2-2) Yr.  Darrow

Similar to, but more advanced than 105b. For students preparing to teach industrial subjects in secondary schools. Prerequisite, 105a-105b. Two laboratory periods. Fee, $6; deposit, $3.

107. Auto Mechanics. (2) I or II.  Currie

Motor reconditioning and general repair of automobiles. Two three-hour shop periods. Fee, $6; deposit, $6. Not for graduate credit.

109. Advanced Auto Mechanics. (2) I or II.  Currie

Special emphasis on testing and repairing electrical systems of modern cars. Prerequisite, 107. One recitation and one three-hour shop period. Fee, $6; deposit, $3. Not for graduate credit.

115. Cabinet Work (Elementary). (2) I.  Darrow

Two laboratory periods. Fee, $6; deposit, $3. Not for graduate credit.
116. Cabinet Work (Advanced). (2) II. Darrow
Continuation of 115. Two laboratory periods. Fee, $6; deposit, $3. Not for graduate credit.

125. Wood Turning. (2) I or II. Darrow
Elementary and advanced wood turning, with both soft and hard woods. Two laboratory periods. Fee, $6; deposit, $3. Not for graduate credit.

MECHANICAL ENGINEERING

Professor M. L. Thornburg (Head of the Department).
Associate Professor P. M. Thornburg.
Assistant Professor Jimerson.

21. Mechanisms. (3) I. Jimerson
Theory of machine elements. Prerequisite, Mechanics Arts 2. Two recitations and one drafting period. Fee, $1.

103R. Heat Engines. (3) I. M. L. Thornburg
Relations and applications of heat and work. Prerequisites, Chemistry 1a and Physics 1a. Three recitations. Not for graduate credit.

103L. Heat Engine Laboratory. (1) I. P. M. Thornburg
Preceded or accompanied by 103R. Fee, $1. Not for graduate credit.

104R. Internal Combustion Engines. (3) II. P. M. Thornburg
Theory and practice in Diesel, automotive, and other internal combustion engines. Three recitations. Prerequisite, 103R.

104L. Gas Engine Laboratory. (2) II. P. M. Thornburg
Preceded or accompanied by 104R. Fee, $1.

105. Machine Design. (3) II. Jimerson
Design of shafts, bearings, and other machine elements. Prerequisites, Mechanical Engineering 21 and Civil Engineering 114R. Two lectures and one drawing period. Offered for electrical engineering students. Fee, $1. Not for graduate credit.

115. Concentrator Equipment Installation. (2) II. P. M. Thornburg
Flow sheet, equipment selection, and plant layout for ore reduction mills. Given in conjunction with the metallurgy department for mining engineers. Prerequisite, Metallurgy 107R. Two laboratory periods. Fee, $1.

125a-125b. Machine Design. (2-2) Yr. Jimerson
Design and layout of machine parts. One recitation and one laboratory period. Prerequisites, Mechanical Engineering 21 and Civil Engineering 114. Fee, $1 per semester. Not for graduate credit.

126. Steam and Gas Power Engineering. (3) II. Jimerson
Theory and practice of commercial power equipment. Prerequisites, Physics 1b and Chemistry 1b. Not for graduate credit.

127a-127b. Mechanical Laboratory. (1 to 2-1 to 2) Yr. M. L. Thornburg
Tests, reports, and inspections. One or two laboratory periods. Prerequisites, 103R and 103L. Fee, $3 per unit per semester. Not for graduate credit.

131. Thermodynamics. (3) I. M. L. Thornburg
Theory and applications of the laws of thermodynamics. Prerequisites, Mechanical Engineering 103R and Mathematics 112b. Three recitations.

134. Power Plants. (3) II. M. L. Thornburg
Modern power plant equipment and practice. Prerequisite, 103R. Three recitations.

135a-135b. Power Equipment Design. (3-3) Yr. M. L. Thornburg
Design and selection of equipment for power production. Prerequisites, 104R and 125b. Two recitations and one drafting period. Fee, $1 per semester.
142. Industrial Engineering. (2) I. P. M. Thornburg
Industrial organization and management. Two recitations.
146. Seminar. (2) II. M. L. Thornburg
Reports and conferences. Two periods per week.
147. Petroleum. (2) I. P. M. Thornburg
Production, refining, and uses of petroleum. One recitation and one laboratory period. Prerequisites, 104R and 104L. Fee, $1.
148. Air Conditioning. (2) II. P. M. Thornburg
Heating, cooling, and humidifying. Two recitations. Prerequisite, 131.
150. Aviation. (2) I or II. M. L. Thornburg
Simple aerodynamics and the airplane. Two lectures. Prerequisite, Civil Engineering 114R.
201. Seminar. (2 to 5) I or II. M. L. Thornburg
Investigations and conferences.

MILITARY SCIENCE AND TACTICS

Professor Peyton (Director of the School and Head of the Department). Assistant Professor Buchly. Assistant Instructors Beck, Murphy.

BASIC COURSES

1a-1b. First Year. (1-1) Yr. Staff
National Defense Act, obligations of citizenship, military history and policy, and fundamentals of military training. Three hours per week.
2a-2b. Second Year. (1-1) Yr. Staff
Extension of first year's work. Three hours per week.

ADVANCED COURSES

103a-103b. First Year. (3-3) Yr. Staff
Advanced military training to qualify students for commissions in the Officers Reserve Corps, Army of the United States. Five hours per week.
104a-104b. Second Year. (3-3 Yr. Staff
Extension of first year's work. Five hours per week.

MINING ENGINEERING AND METALLURGY

Professors Chapman (Head of the Department), Ehle, G. M. Butler, J. B. Cunningham, Mathewson.
Instructor Thompson.

MINING ENGINEERING

101. Development. (2) I. Cunningham
Introduction to mining engineering. Study of prospecting, exploration, explosives, blasting, drilling, and the use of compressed air. Two lectures. Not for graduate credit.
102. Exploitation. (1) II. Cunningham
Mining methods—surface and underground. Two lectures. Not for graduate credit.
103. Mining Operations. (2) II. Cunningham
Surface and underground transportation and hoisting; equipment. Two lectures.
104. Mining Operations. (2) II.  
   Ehle  
   Drainage and ventilation of mines; equipment. Three lectures.

105. Design of Mine Plants. (2) II.  
   Ehle  
   Training in the solution of problems involving selection, design, and construction of structures used in mining operations. Two laboratory periods.

108. Mining Laboratory. (2) II.  
   Cunningham  
   Intended to familiarize the student with mine equipment, its use, and methods of testing it. Discussion of mining problems; field trips. Fee, $5.

119. Mine Examinations and Reports. (1) II.  
   G. M. Butler  
   Valuation of ore bodies and placer deposits; the preparation of reports and discussion of engineering ethics. Prerequisite, completion of Junior work in mining engineering. Two lectures.

124. Technical Records. (1) I or II.  
   Mathews  
   Methods of accumulating, classifying, interpreting, and recording of technical data. For Seniors and graduate students in engineering. Two lectures.

**METALLURGY**

102R. Fire Assaying. (1) I.  
   Thompson  
   Study of the theory involved in the determinations of gold, silver, and lead in ores and metallurgical products by pyro methods. One lecture. Not for graduate credit.

102L. Fire Assaying Laboratory. (2) I.  
   Thompson  
   Practice in the assaying of gold, silver, and lead ores and metallurgical products by pyro methods. Two laboratory periods. To be preceded or accompanied by Chemistry 4. Fee, $15. Not for graduate credit.

107R. Ore Dressing. (3) I.  
   Chapman  
   The crushing, grinding, and concentrating of ores by mechanical methods. Three lectures.

107L. Ore Dressing Laboratory. (1) II.  
   Chapman and Thompson  
   Practice in crushing, grinding, and concentrating ores by mechanical methods. One laboratory period. Prerequisites, 120R, 102L, and 107R. Fee, $3. Not for graduate credit for majors in metallurgy.

111. General Metallurgy and Metallurgy of Copper. (2) II.  
   Cunningham  
   Study of ores, fuels, refractories, fluxes, slags, and pyrometallurgical processes used in treating copper ores. Two lectures.

112. Metallurgy of Lead, Zinc, and Iron. (2) II.  
   Cunningham  
   The study of the various smelting and refining processes adapted to the treatment of lead, zinc, and iron ores. Three lectures.

114. Hydrometallurgical Laboratory. (2) I or II.  
   Cunningham  
   Laboratory practice in the treatment of gold, silver, and copper ores by hydrometallurgical methods. Two laboratory periods. Prerequisites, 102, 107R, and preceded or accompanied by Chemistry 101. Fee, $10.

116R. Alloys and Heat Treatment. (2) II.  
   Chapman  
   A study of the production of pig iron, steel, and the important nonferrous metals, followed by a study of the important ferrous and nonferrous alloys with special attention to heat treating operations. For students in mechanical engineering. Two lectures. Not for graduate credit for majors in metallurgy.

116L. Alloys and Heat Treatment Laboratory. (1) II.  
   Thompson  
   Heat treatment, preparation, and microscopic examination of metals and alloys. One laboratory period. Fee, $1.50.

119. Metallography and Heat Treatment. (1) I.  
   Chapman  
   Properties of metals, constitution of alloys and metallurgical products, equilibrium diagrams, heat treating operations. One lecture.

119L. Metallography and Heat Treatment Laboratory. (1) I.  
   Thompson  
   Heat treatment, preparation, and microscopic examination of metals and alloys. One laboratory period. Fee, $1.50.
120. Hydrometallurgy. (2) I.
Chapman
A study of the hydrometallurgical processes employed for the recovery of gold, silver, copper, and zinc from their ores. Two lectures.

121. Metallurgical Calculations. (2) I.
Cunningham
Problem course involving calculations encountered in the practice of metallurgical engineering. Two classroom periods. Prerequisite, 112.

122a-122b. Human Engineering. (2-2) Yr.
Mathewson
A study of the human relations of the young engineer with his subordinates and his superiors. For Senior and graduate students in engineering.

123. Metals, Fuels, and Refractories. (1) I or II.
Mathewson
The occurrence, uses, geographical distribution and commercial control of the important metals, fuels, and refractories. For Seniors and graduate students in engineering.

202. Metallurgy of the Less Common Metals. (1) II.
Chapman
A study of the metallurgical processes employed for the recovery of nickel, tin, mercury, antimony, bismuth, platinum, tungsten, molybdenum and other metals from their ores. One lecture.

211a, b, c. Advanced Metallurgy and Ore Dressing.
(2 to 8) I or II.
Chapman–Cunningham–Thompson
Advanced classroom or laboratory work, or both, in hydrometallurgy, ore dressing, and pyrometallurgy. Details subject to arrangement. Open to graduate students in metallurgy and to Senior students in mining engineering.

213. Advanced Metallography and Heat Treatment.
(1 to 5) II.
Thompson
This course is offered for men desiring to take more work in metallography and heat treatment than is offered in course 119. The work may be pursued along microscopic lines, defective metal testing, or advanced microscopic work on metallurgical products.

250a-250b. Seminar in Administration of Mineral Resources. (3 to 8-3 to 8) Yr.
Mathewson
Mine, concentrator, and smelter operation and management. Open only to candidates for the degree of Administrative Engineer of Mines or Administrative Metallurgical Engineer. Field work during second semester.

MUSIC
Professors Andersen (Director of the School, and Head of the Department of Composition), Rebell (Head of the Department of Piano), Altman, Pease (Head of the Department of Voice), Schultz (Head of the Department of School Music).
Associate Professor Colcaire.
Assistant Professors Clampitt, Lowell.
Instructors Johnson,* Anderson, Ross, Sharp.

The major in music for students other than those registered in the School of Music: 24 units above Music 1a-1b including 3a-3b; applied music, 8 units; 4a-4b, 102a-102b, 108a-108b, and 114a-114b.

The supporting minor for the above major shall consist of 20 units advised from the following departments: art, dramatic art, English, history, languages, philosophy, psychology, speech.

The minor in music in the College of Education: applied music (one subject), 4 units; Music 3a-3b, 5a-5b, 1a-1b (or 102a-102b); School Music, 4 units; and music electives, 2 units.

The minor in music in the College of Liberal Arts and for majors in dramatic art, art, and speech: applied music (one subject) 4 units; Music 1a-1b or 102a-102b; Music 3a-3b, 5a-5b, 7a-7b; 4 units of electives.

* On leave 1937-38.
DESCRIPTION OF COURSES

THEORY

1a-1b. Music Appreciation. (2-2) Yr.

A course for students with no technical knowledge of music. The music of the various periods is studied in relationship to other arts, and through oral training the attitude of a critical listener is created. Not for credit to music majors.

2. Fundamentals of Music. (1) I.

Open only to non-music majors for credit. Rudiments of theory and rhythm.

3a-3b. Harmony I. (2-2) Yr.

A course designed to give a thorough groundwork in the harmonic elements of music, plus part-writing in the use of all triads, seventh chords, and the dominant ninth chord. Text: Andersen, First Forty Lessons in Harmony.

4a-4b. Harmony II. (2-2) Yr.

Continuation of 3a-3b. The study of altered and mixed chords, transition, modulation and ornamentation and the Bach Chorals. Text: Andersen, Second Forty Lessons and Supplementary Work.

5a-5b. Ear-Training and Sight-Singing I. (1-1) Yr.

The rhythmic, melodic and harmonic aspects of music from the standpoint of singing and dictation. A companion course to 3a-3b. Text: Wedge, Ear-training and Sight-singing.

6a-6b. Ear-Training and Sight-Singing II. (1-1) Yr.

A continuation of 5a-5b. Material presented in 4a-4b studied in singing and dictation. Prerequisite, 5a-5b. Text: Wedge, Advanced Ear-training and Sight-singing.

7a-7b. Keyboard Harmony I. (1-1) Yr.

Practical application of material presented in 3a-3b. Prerequisite, 3a-3b or concurrent registration in 3a-3b.

8a-8b. Keyboard Harmony II. (1-1) Yr.

Practical application of material presented in 4a-4b. Prerequisites, 4a-4b or concurrent registration in 4a-4b, and 7a-7b.

102a-102b. Survey of Musical Literature. (2-2) Yr.

Music of all periods played and analyzed. The lives, works and influences of the composers discussed and studied, together with the relation of music to the allied arts. Prerequisites, 3a-3b and 5a-5b, or consent of the instructor. Not for graduate credit.

103a-103b. Orchestral Repertoire. (2-2) Yr.

A critical survey of symphonic literature and an intensive study of scores with special emphasis upon various musical forms. Prerequisite, Junior standing in the School of Music or consent of the instructor.

108a-108b. Form-and Analysis. (2-2) Yr.

A study of formal design and methods of structural treatment in homophonic forms, plus a history of conventional styles of composition. Prerequisites, 3a-3b and 4a-4b. Not for graduate credit.

109a-109b. Counterpoint I. (2-2) Yr.

Strict and free counterpoint through the invention form. Invertible counterpoint. Prerequisites, 3a-3b and 4a-4b. Text: Andersen, Strict and Free Counterpoint.

110a-110b. Composition I. (2-2) Yr.

Original work in composition, including all the primary forms: theme and variations, sonatina-allegro, simple rondo and suite. Prerequisites, 4b and registration or credit in 108a-108b.

111a-111b. Composition II. (2-2) Yr.

The larger forms in composition: sonata-allegro, the larger rondo forms, the chaconne, the passacaglia, the lyrical suite. Prerequisite, 110a-110b or consent of the instructor.
112a-112b. Counterpoint II. (2-2) Yr.  Andersen
   The larger contrapuntal species analyzed and essayed. Canons in all
   forms; fugues in two, three, four, and five voices; double fugues; the vocal
   fugue. Prerequisite, 109a-109b.

114a-114b. Orchestration I. (2-2) Yr.  Lowell
   Individual and combined possibilities of orchestral instruments studied.
   Original work and transcriptions for various combinations. Prerequisites,
   4a-4b and registration in 109a-109b, or consent of instructor. Text: Ande-
   rsen, Practical Orchestration.

115a-115b. Band Arranging. (2-2) Yr.  Anderson
   Same as 114a-114b for band instruments. Prerequisite, 114a-114b.

194. Modern Harmony. (2) II.  Andersen-Lowell
   An advanced course in the technique of the modern composer and a brief
   study of acoustics. Prerequisites, Senior standing and the consent of the
   instructor.

202a-202b. Composition III. (2-2) Yr.  Andersen
   Modern harmonic and contrapuntal technique applied to the larger forms.
   The larger vocal compositions. Prerequisite, 111a-111b.

210a-210b. Orchestration II. (2-2) Yr.  Andersen
   Application of orchestration in original work in the larger forms: overture,
   concerto, symphonic poem, chamber music, symphony or vocal forms with
   orchestral accompaniment. Prerequisites, 111a-111b, 114a-114b, and registra-
   tion in 112a-112b. Text: Andersen, Practical Orchestration.

225. Thesis and Research. (2 to 4) I or II.  Anderson
   Original conception of some phase of music requiring extended research
   in musical or co-ordinated fields (at least 15,000 words); or an outstanding
   original composition in a large form suitable for public performance and
   tested publicly before a representative audience.

BAND AND ORCHESTRAL INSTRUMENTS

11a, b, c, d. Woodwind Ensemble. (1) I or II.  Anderson
   For majors in woodwind instruments. Classical and modern works studied
   and performed. Transcribing piano and organ works for woodwind groups.

12a, b, c, d. Brass Ensemble. (1) I or II.  Anderson
   Same as above for brass instruments.

17a, b, c, d. Individual Band or Orchestral
   Instruments. (1 to 2) I or II.  Anderson-Ross
   Individual lessons on the instruments of the band and orchestra, including
   harp.

18a, b, c, d, e, f, g, h. Individual Band or Orchestral
   Instruments. (1 to 2) I or II.  Anderson-Ross
   This is a continuation of 17a, b, c, d.

19a, b, c, d. Individual Band or Orchestral
   Instruments. (1 to 4) I or II.  Anderson-Ross
   Individual lessons on the instruments of the band and orchestra.

20. Concert Band. (1) I or II.  Anderson
   May be taken for credit any semester the student is registered in the Uni-
   versity. Admission by examination. Meets four class hours per week.

21a, b, c, d. Wind Instrument Class. (1) I or II.  Ross
   Class instruction on brass and woodwind instruments. Meets two periods
   per week. For beginners only. Instruments may be rented from the School
   of Music for $2 per semester.

23a, b, c, d. Percussion Instrument Class. (1) I or II.  Anderson-Ross
   Class instruction on drums, timpani, bells, xylophone, etc. Meets two periods
   per week. For beginners only. Instruments may be rented from School of
   Music for $2 per semester.
117. Orchestral and Band Conducting. (2) I. Anderson

119a, b, c, d. Individual Band or Orchestral Instruments. (1 to 4) I or II. Anderson
A continuation of 19d. Not for graduate credit.

219a, b. Individual Band or Orchestral Instruments. (3 to 6) I or II. Anderson
A continuation of 119d.

ORGAN

36a, b, c, d. Organ. (1 to 2) I or II. Coleman
Preliminary course—not for majors. Presentation of fundamentals of organ playing. Requirements parallel to those for Piano 26. Also open to adult beginners. Part of work to be done on piano.

37a, b, c, d, e, f, g, h. Organ. (1 to 2) I or II. Coleman
Course for school music students. Requirements parallel to those for Piano 27. Part of work to be done on piano.

38a, b. Organ. (2 to 4) I or II. Coleman
For organ majors. Bach's piano inventions, preludes, and fugues on the organ. Technical studies for manual and pedal (Dupré). Bach's easy organ works, chorales, small preludes, and fugues. Prerequisite, Piano 28a, b or concurrent registration.

38c, d. Organ. (2 to 4) I or II. Coleman
For organ majors. Required registration in Piano 28c, d. More difficult works of Bach; classic and modern compositions.

138a, b. Organ. (2 to 4) I or II. Coleman
For organ majors. Bach's sonatas and larger works; Mendelssohn's preludes, fugues, and sonatas; Handel's concertos; works of old masters and of Franck, Widor, Guilmant, Boellmann, Dubois, and representative American composers. Improvisation in primary forms.

138c, d. Organ. (2 to 4) I or II. Coleman
For organ majors. Advanced works of Bach. Franck's chorals, Widor's symphonies, and selected compositions of European composers and Americans including Sowerby, De Lamarter, and Noble. Improvisation in larger forms.

238a, b. Organ. (3 to 6) I or II. Coleman
Most advanced works of Bach, Franck, Widor, Vierne, Dupré, and modern pieces by American, French, English, and German composers. Improvisation.

PIANO

26a, b, c, d. Piano. (1 to 2) I or II. Rebeill-Altman-Clampitt
Preliminary course. Scales in all forms. Technique equivalent to Czerny Op. 299; Bach's short preludes and fugues.

27a, b, c, d, e, f, g, h. Piano. (1 to 2) I or II. Rebeill-Altman-Clampitt

28a, b, c, d. Piano. (1 to 4) I or II. Rebeill-Altman-Clampitt
For piano majors. Bach's inventions, suites, preludes, and fugues; Cramer and Clementi studies, sonatas, classic and modern compositions.

30a-30b. Piano Class. (1-1) Yr. Rebeill-Altman-Clampitt
For adult beginners. Presentation of fundamentals of piano playing, through correlation of theory and ear-training with technique and interpretation.
126a, b, c, d, e, f, g, h. Piano Ensemble. (1) I or II. Rebell-Altman-Clampitt
Study of symphonic transcriptions and original compositions arranged for two pianos. Not for graduate credit.

128a, b, c, d. Piano. (1 to 4) I or II. Rebell-Altman-Clampitt
Bach's preludes and fugues; studies by Kessler, Rubinstein; sonatas by Beethoven, Schumann. Classic and modern compositions.

228a, b. Piano. (3 to 6) I or II. Rebell-Altman
Bach's larger works; sonatas by Chopin, Beethoven, etudes by Chopin, Liszt; concertos by Schumann, Rubinstein, Rachmaninoff.

SCHOOL MUSIC

77. School Music Ensemble. (1) II. Schultz
Instrumental and vocal ensemble. Suitable music for school groups is used. Required of all school music majors each spring semester during residence. Instruments may be rented from the School of Music for $2 per semester.

176. Elementary School Music. (2) I. Schultz
Song singing, rhythmic sense development, listening lessons, music reading and projects for grades one to six. Not for graduate credit.

177. Comparative School Music. (2) II. Schultz
A comparative study of various music courses of study and textbook series in common use in the elementary grades. Not for graduate credit.

179. Instrumental School Music. (2) II. Schultz
Theory of instrumental organization and procedure in the schools. Materials of all grades of difficulty. Prerequisite, 114a. Not for graduate credit.

276. Modern Tendencies in Music Education. (2) I. Schultz
The trend in objectives; criticisms of current music education; curriculum analysis, evaluation, and construction.

277. Problems in School Music Supervision. (2) II. Schultz
Supervisory objectives, procedures, and devices; music tests and measurements in relation to supervision.

Teaching of Music. (3) I. Schultz
For description see Education 197m. Required of all students in School of Music majoring in school music.

VIOLIN

14a, b, c, d. Violin. (1 to 2) I or II. Sharp
For beginners and non-majors who have had foundation work. Scales and studies of Hrimaly, Schradieck, Kayser, Dancia and De Beriot.

15a, b, c, d, e, f, g, h. Violin. (1 to 2) I or II. Sharp
Scales and arpeggios through three octaves. Studies of Dont, Schradieck, Kreutzer and Fiorillo. Selected repertoire from classical and modern compositions.

16a, b, c, d. Violin. (1 to 4) I or II. Sharp
For majors. More intensive study of same material covered in 15h.

22. Orchestra. (1) I or II. Sharp
Standard symphonic literature is studied and performed. Orchestral works by advanced students are given opportunity of performance.

24a, b, c, d. String Instrument Class. (1) I or II. Sharp
For beginners in all string instruments. Instruments may be rented from School of Music for $2 per semester.

116a, b, c, d. Violin. (1 to 4) I or II. Sharp
For advanced students. Scales in thirds, sixths, octaves, and tenths. Selected etudes and caprices by Rode, Dont, Rovelli, etc. Classical and modern concertos and sonatas.
DESCRIPTION OF COURSES

118a, b, c, d, e, f, g, h. String Ensemble. (1) I or II. Sharp
Classical and modern compositions studied and performed. All forms of string ensemble included.

216a, b. Violin. (3 to 6) I or II. Sharp
Scales and arpeggios in octaves. Paganini-Wieniawski caprices; sonatas by Bach, Franck, Brahms, Strauss, and Carpenter; concertos by Saint-Saens, Brahms, Dvorak, Beethoven, and Paganini.

VOICE

56a, b. Voice. (1 to 2) I or II. Pease-Colcaire
The systematic development of breathing, rhythm, resonance, intonation, and diction. Correction of vocal defects. For beginners only.

57a, b, c, d, e, f, g, h. Voice. (1 to 2) I or II. Pease-Colcaire
Primarily for school music majors and general University students.

58a, b, c, d. Voice. (1 to 2) I or II. Pease-Colcaire
A course for voice majors, planned to meet the needs of students with previous preparation or unusual ability. Marzo, The Art of Vocalization, Book I or its equivalent; Presser, Song Classics.

61. Men's Glee Club. (1) I or II. Pease-Schultz
Study and performance of part songs, Messiah, opera, medieval polyphony, and modern compositions. The club usually takes a ten-day trip between semesters giving about twenty concerts.

62. Women's Glee Club. (1) I or II. Schultz-Pease
Requirements and privileges are similar to those for the Men's Glee Club.

158a, b, c, d. Voice. (1 to 4) I or II. Pease
Continuation of 58d with advanced repertoire. Public recital required. Not for graduate credit.

159. Choral Conducting. (1) II. Schultz
Tone production, entry-relation, etc. Fundamental and technical problems of conducting. Not for graduate credit.

258a, b. Voice. (3 to 6) I or II. Pease
For Seniors and graduate students who have completed all under-graduate work in voice.

PHILOSOPHY AND PSYCHOLOGY

Professors Schneck (Head of the Department), Riesen.
Associate Professor Simley.
Assistant Professor Ellis.

PHILOSOPHY

The major: 24 units including Philosophy 12 and 101a-101b; 16 units must be upper-division work.
The supporting minor should be chosen from: history, literature, mathematics, psychology, social sciences, physical sciences.

11. Introduction to Philosophy. (3) II. Riesen
Meaning and scope of philosophy, typical problems and theories, relation to other aspects of life.

12. Logic. (3) I. Schneck
Thinking processes from the point of view of validity. Inference, the methods of science, importance of reflective thinking.

20. Elementary Ethics. (2) I. Ellis
Growth of conscience, evolution of morality, basis of right and wrong, relation of morality to social controls. Not open to upper-division students.
101a-101b. History of Philosophy. (3-3) Yr. Schneck
The origin and development of philosophical thinking, from the Greeks to modern times. Students may begin in either semester.

120. Principles of Ethics. (2) II. Ellis
Meaning of moral conduct, responsibility, and freedom. A criticism of historic philosophies of life. Students planning to elect this course should prepare for it by previous election of one or more of the following: 11, 101a, 101b.

126. Philosophy of Religion. (2) I. Ellis
Rites, ceremonies, religious experience. The central concepts of religion, relation to science and morality. Offered in 1938-39 and alternate years.

128. Principles of Esthetics. (2) I. Ellis
Value in art and nature. The problem of beauty. The works of great artists will be studied and evaluated. Offered in 1937-38 and alternate years.

133. Plato and Aristotle. (3) II. Schneck
Selections from Plato and Aristotle with critical analysis. Prerequisite, 101a.

230a-230b. Philosophical Literature. (2-2) Yr. Riesen
Masterpieces in world literature from the point of view of their philosophy. Dante, Lucretius, Goethe, Ibsen, Nietzsche, etc. Prerequisites, 6 units in upper-division philosophy or literature and graduate or Senior standing. Only 230b will be given in 1937-38, first semester.

250a-250b. Seminar. (2-2) Yr. Schneck
Prerequisites, 101a-101b, 3 other units in philosophy or psychology, and graduate or Senior standing.

Philosophy Honors. (2-2) Yr.
For particulars see page 114.

PSYCHOLOGY

The major: 24 units including 1a-1b, 105a-105b, 150, 240; 16 units must be upper-division work.
The supporting minor should be chosen from: zoology, mathematics, philosophy, physics.

1a-1b. Elementary Psychology. (3-3) Yr. Schneck-Simley
General introduction to the experimental study of human behavior. Open to Sophomores and upper-division students. Both 1a and 1b given each semester.

15. Social Psychology. (3) I. Simley
Foundations of social behavior; development of personality; crowd contagion, suggestion, communication, fad, fashion, etc. Prerequisites, 1a and either 1b or Education 151.

22. Applied Psychology. (3) II. Simley
Applications of psychological principles to business, industry, law, medicine, and other fields. Prerequisite, 1a-1b.

103. Physiological Psychology. (3) II. Simley
The bodily structures and functions, as related to physiological processes. Admission on consent of instructor. Prerequisite, 1a-1b.

105a-105b. Experimental Psychology. (3-3) Yr. Ellis
Methods of controlled experimentation on human behavior. Admission on consent of the instructor. Prerequisite, 1a-1b. Laboratory fee, $1 each semester.

111. Comparative Psychology. (3) I. Ellis
The development of behavior from its simpler or more elementary forms through the evolutionary series to man. Prerequisite, 1a-1b.

112. Development of Human Behavior. (3) II. Ellis
The changes in human behavior from conception to death. Prerequisites, Psychology 1a and either 1b or Education 151.
118. Abnormal Psychology. (3) II. Simley
Forms of mental abnormality and deficiency. Interests of premedical and law students considered. Prerequisites, la and either lb or Education 151. Field trip fee, $3.

150. Mental Tests and Measurements. (3) I. Simley
Principles of mental measurement and of the construction of tests. Two lectures and one laboratory period. Prerequisite, la-1b. Laboratory fee, $2.

223a-223b. Research. (1 to 4-1 to 4) Yr. Staff
Investigation of problems of psychology for which the student is prepared.

230. Psychology of Learning. (3) I. Simley
Evaluation of current theories and explanations of the learning process. Admission upon consent of the instructor.

240. Psychology of Perception. (3) II. Ellis
Psychological factors involved in apprehending and interpreting our environment. Laboratory demonstrations. Admission upon consent of the instructor.

Psychology Honors. (2-2) Yr.
For particulars see page 114.

PHYSICAL EDUCATION FOR MEN

Professor McKale (Head of the Department).
Associate Professors Enke, Oliver.
Assistant Professors Picard, Gibbings,
Instructor Robinson.
Graduate Manager Slonaker.

The major: 24 units in courses above the Sophomore 38a-38b. Courses must be selected from 160, 162, 180, 181, 189, 190, 192, 193, 194, 195, 196, 198, 199. Physical Education 162, 189, and Zoology 8 are required.
The supporting minor shall consist of 20 units advised from: mathematics, chemistry, history, economics, biology, and mechanic arts.
The teaching minor shall consist of at least 15 units selected from the following courses: 160, 162, 180, 181, 190, 192, 193, 194, 195, 196, 198, 199. Physical Education 162 is required for the minor.

25. Freshman Physical Education. (1½) I. Staff
A course designed to present the general field of physical education to the Freshman student so that he may know something of the following courses he may select. Two periods per week.

26. Beginning Swimming. (½) II. Gibbings
A course required of students who cannot swim 100 yards. Two periods per week.

27. Individual Athletics. (½) II. Staff
Emphasis placed upon individual activities that give the student training in the fundamental physical skills. Two periods per week.

28a-28b. Individual Gymnastics. (1½-1½) Yr. Picard
A small percentage of the Freshman and Sophomore classes have some physical disability that prevents enrollment in military training. Corrective and preventive exercises, etc. for prevention or relief are given. Five periods per week, since it is substituted for military training, both in practice and credit.

29. Games. (½) II. Staff
Volleyball, playground ball, speedball, and related activities. Games emphasized that carry over to adult life. Two periods per week.
30. Wrestling. (⅓) I or II.  Picard
The fundamental positions while on the mat or on the feet. Two periods per week. May be substituted for any Freshman physical education course except 26. The course cannot be repeated for credit.

31. Boxing. (⅔) I or II.  Picard
A course for beginning boxers. Fundamental blows and counters and ring strategy. Class meets twice a week. May be substituted for any Freshman physical education course except 26. The course cannot be repeated for credit.

35. Advanced Swimming. (⅔) II.  Gibbings
Advanced instruction in the technique of the following strokes: crawl, side, breast, and back. Prerequisite, ability to swim 100 yards in good form, the stroke used being optional. Not open to students who have taken 26. Two periods per week.

36. Tumbling and Apparatus Stunts. (⅔) I or II.  Robinson
Instruction in the elementary aspects of tumbling and apparatus stunts. Two periods per week.

38a-38b. Individual Gymnastics. (1-1) Yr.  Picard
Further prevention or correction of physical defects discovered in Freshmen, or beginning work for students who have developed, since their Freshman year, any disease, defect, or disability that may be benefited through medical measures. Three periods per week.

160. Mass Gymnastics. (2) I or II.  Picard
A practice course in the fundamentals of boxing and wrestling, and in the leadership of mass activities. Five periods a week. Not for graduate credit.

162. Life Saving. (1) II.  Gibbings
Required of students majoring or minoring in physical education. All students required to take the Red Cross Life Saving Tests, completion of which entitles the student to Red Cross Life Saving Certificates. Three periods per week. Not for graduate credit.

The Teaching of Physical Education for Men. (3) I.  Picard
For description see Education 197p. Required of all students majoring in physical education for men. Prerequisites, Education 134 and 12 units of physical education above the Sophomore year.

Fifty-six units of credit are required for entrance to the courses listed below:

180. Calisthenics. (2) I.  Picard
History, systems, problems, aims and objectives, lesson formation, pedagogy, and prescription of exercises for normal groups. Not for graduate credit.

181. Playgrounds and Recreation. (3) II.  Picard
Course covers the steps in organization and the administrative procedure necessary for promoting public recreation. Not for graduate credit.

189. History of Physical Education. (1) I.  Picard

190. First Aid and Training. (1) I or II.  Gibbings

192. Health Education. (3) I.  Picard
Study of the organization and administration of health problems in public schools. Zoology 4, 8, and 57 are desirable.

193. Orthopedics. (3) II.  Picard
Theory and practice in the treatment of physical defects and organic disabilities by exercise and other physiotherapeutic modalities. Prerequisites, Zoology 4, 8, and 57. Botany 67 and Home Economics 2 are desirable.
194. Athletic Coaching—Football. (3) I. McKale
Theory of coaching, strategy and tactics. Study of the different offenses and defenses. Ethics, sportsmanship, and fundamentals are emphasized. Not for graduate credit.

195. Athletic Coaching—Basketball. (2) I. Enke
An intensive study of the rules, officiating, history, equipment, fundamentals, offense, defense, practice tournament, play, and organization. Not for graduate credit.

196. Athletic Coaching—Baseball. (3) II. McKale

198. Athletic Coaching—Track and Field Athletics. (2) II. Oliver

199. Athletic Coaching—Advanced Football. (2) II. Enke
Detailed instruction and application of all football fundamentals. Two-hour field period weekly. Prerequisite, 194. Open only to those majoring or minoring in physical education. Not for graduate credit.

PHYSICAL AND HEALTH EDUCATION FOR WOMEN

Professor Gittings (Head of the Department).
Associate Professor Chesney.
Assistant Professor Kling.
Instructor Brockmeier.

The major: 24 units including 8 units in physical education activity courses above 1a-1b, 2a-2b, 8 units in physical education theory courses, and 8 units in methods and material courses.

The supporting minor shall consist of 20 units advised by the major professor.

The teaching minor: 18 units including 8 units of physical education activity courses and 83, 86a-86b, and 152.

Physical education is required of all lower-division women students registered for 6 or more units of University work.

Registration in physical education activity courses is open only to students taking 6 or more units of University work.

Physical examinations are given by the Department of Physical and Health Education and by the Medical Department. The activity program of each girl is based upon findings during these several examinations.

Activity Program—Each Freshman and Sophomore woman judged able to participate in activities has a choice of a different sport each semester. She may choose from the following: swimming, dancing, hockey, riding (very limited), tennis, baseball, basketball, archery, golf, volleyball, minor sports, shuffleboard, bowling, or modified gymnastics. Grades are given for skill and achievement. The schedule for each sport will be announced during registration week. Students will be expected to furnish part of their personal equipment in archery, tennis, and golf. Fees are required each semester as follows: riding, $10; beginning golf, $4; intermediate golf, $6; advanced golf, $8.

Women's Gymnasium Fee—All women registered for an activity course in the Department of Physical and Health Education will pay a fee of $5 each semester. This fee, which covers the cost of the laundry of towels, swim suits, and gymnasium suits, will entitle each student to
use of locker, lock, towel, swim suit, pool, gymnasium, fields, athletic equipment, and gymnasium suit. Two dollars of this fee will be refunded each semester to each student who has returned in good condition all articles charged to her. Refunds are made only on the dates posted by the Department of Physical and Health Education.

Non-Activity Program—For those physically unable to participate in any physical activity classes in health behavior (Freshman and Sophomore) are conducted. The student in this type of work must learn the essentials of hygiene and be tested in the practical application to her problem. No gymnasium fee.

Extracurricular Program—A program of extracurricular athletics is sponsored by the Physical Education Department and conducted after school by the Women’s Athletic Association, a student-body organization, Professor Chesney, sponsor.

**ACTIVITY COURSES**

1a-1b. Physical Education—Freshman Activity Program. (1-1) Yr.

  Practice in sport skills. Two periods per week, 1½ hours each. See activity program above. Hours to be arranged.

2a-2b. Physical Education—Sophomore Activity Program. (1-1) Yr.

  Practice in sport skills. Two periods per week, 1½ hours each. See activity program above. Hours to be arranged.

5a-5b. Physical Education—Freshman Major Activity Program. (1-1) Yr.

  Special work in sports. Choice of sports permitted from activity program. Required of physical education majors. Other students specially qualified are admitted. Hours to be arranged. Students having credit for 1a-1b will not be allowed to enter 5a-5b.

6a-6b. Physical Education—Sophomore Major Activity Program. (1-1) Yr.

  Special work in sports. Choice of sports permitted from activity program. Required of physical education majors. Other students specially qualified are admitted. Hours to be arranged. Students having credit for 2a-2b will not be allowed to enter 6a-6b.

105a-105b. Physical Education—Junior Activity Program. (1-1) Yr.

  Participation in conduct of games or sports. Two periods per week, 1½ hours each. Choice of sports from activity program. Not for graduate credit.

106a-106b. Physical Education—Senior Activity Program. (1-1) Yr.

  Participation in conduct of games or sports. Two periods per week, 1½ hours each. Choice of sports from activity program. Not for graduate credit.

110a-110b. Physical Education—Junior Major Activity Program. (1-1) Yr.

  Advanced work in sports. Choice of sports permitted from activity program. Required of physical education majors. Not for graduate credit.

114a-114b. Physical Education—Senior Major Activity Program. (1-1) Yr.

  Advanced work in sports. Choice of sports permitted from activity program. Required of physical education majors. Not for graduate credit.
HEALTH COURSES

3a-3b. Health Behavior. (1-1) Yr.  
Gittings  
Course required of Freshman women with health handicap who are denied registration in Physical Education 1a-1b. Study of handicap of each individual. Project method. Experiments by the individual in checking, measuring, and controlling factors that may affect health.

4a-4b. Health Behavior. (1-1) Yr.  
Brockmeier  
Course required of Sophomore women with health handicap who are denied registration in Physical Education 2a-2b. Study of handicap of each individual. Project method. Experiments by the individual in checking, measuring, and controlling factors that may affect health. Study of literature in field of hygiene.

THEORY COURSES

82.* Play and Playgrounds. (3) I.  
Chesney  
Theories of play; methods of organization, administration, and management of playgrounds; discussion of equipment; study of methods of producing games or play leaders. Offered in 1937-38 and alternate years.

84.* First Aid. (1) I or II.  
Kling  
Instruction in quick and efficient treatment in cases of accident or emergencies. Life saving practice and Red Cross tests.

152.* Health Examinations and Anthropometry. (3) I.  
Gittings  
Study of the human body, its measurements, its aspects and mechanical structure in order to judge health, skill, ability, and organic condition. Offered in 1938-39 and alternate years.

153. Health Direction. (3) I.  
Gittings  
Study of source materials in the field of health education, health service, and physical education. Outlining of programs for health instruction. Offered in 1937-38 and alternate years.

158.* History and Principles of Physical Education. (3) II.  
Gittings  
This course deals with the bodily activities and play of former civilizations and progress of physical education in the United States and European countries. Study of the objectives, standards, and methods of physical-education systems. Offered in 1938-39 and alternate years.

200. Advanced Studies in Physical and Health Education. (2 to 4) I or II.  
Gittings  
For students who wish to carry on independent study or research in the field of physical education. Conference hours to be arranged.

202. Physiotherapy. (3) I or II.  
Gittings  

METHODS AND MATERIAL COURSES

83. Games. (2) II.  
Brockmeier  
Games for the school playground, schoolroom, games of low organization, stunts, relays, and social games.

85. Minor Sports. (2) II.  
Brockmeier  
Girl Scout leadership. Practice and theory of coaching minor sports, yard games, and modified activities such as volleyball, croquet, badminton, deck tennis, horseshoes, shuffleboard, and bowling. Fee, $2. Prerequisites, 1a-1b, 2a-2b, and 82. Offered in 1938-39 and alternate years.

86a-86b. Sports Coaching. (2-2) Yr.  
Kling-Chesney  
Practice and theory of coaching hockey, baseball, soccer, basketball, speedball, swimming, and diving. Discussion of game techniques, equipment, rules and duties of sports officials. Prerequisites, 1a-1b and 2a-2b. Offered in 1938-39 and alternate years.

*Nonvocational course. Credit may apply to graduation in any college.
155a-155b. Sports Coaching. (2-2) Yr. Brockmeier-Chesney
Practice and theory of coaching tennis, golf, archery, swimming, and life saving. Discussion of game values, technique, equipment, and rules. Theory and practice in duties of officials. Prerequisites, advanced swimming and one semester of tennis. Offered in 1937-38 and alternate years. Not for graduate credit.

163a-163b. General Gymnastics. (2-2) Yr. Kling-Brockmeier
Teaching of floorwork, marching, and apparatus work based on American, German, and Danish systems. Practice in schoolroom gymnastics, tumbling, and apparatus work. Conducting squads, readings, notebook work. Not for graduate credit.

The Teaching of Physical and Health Education for Women. (3) II. Gittings
For description see Education 197n. Required of all students majoring in Physical and Health Education. Prerequisites, Education 134 and 12 units in physical education above 2b. Offered in 1937-38 and alternate years.

Related Courses:
Music 2, Education 197r, Rhythmics 176, and Social Fundamentals.

RHYTHMICS
Assistant Professor Wright (Head of the Department).

The major: 1a-1b, 3a-3b, 100a-100b, 102a-102b, 104, 174, 175, 176; Education 197r; music (applied) 8 units, 3a-3b.

Note: Physical Education 1a-1b (Dancing) may be substituted for Rhythmics 3a-3b, and Physical Education 2a-2b (Folk and Tap Dancing), for Rhythmics 1a-1b.

The supporting minor should be chosen from: art, anthropology, literature, drama, music, foreign language, or psychology.

1a-1b. Elementary Folk Dancing. (1-1) Yr. Wright
Fundamentals of folk, tap, and character dancing. Simple dances suitable for a recreation program. For men and women.

3a-3b. Elementary Rhythmics. (1-1) Yr. Wright
Techniques and technical progressions based upon a fundamental analysis of movement for the dance. Emphasis on motor balance and control. For men and women.

6. Technique of Everyday Activities. (1) II. Wright

100a-100b. Advanced Folk and Tap Dancing. (1-1) Yr. Wright
Characteristic dances of various nations suitable for high-school and college classes. Advanced tap routines. Prerequisite, 1a-1b. For men and women. Not for graduate credit.

102a-102b. Advanced Rhythmics. (1-1) Yr. Wright
Practice in advanced technique and choreographical method of the modern dance. Prerequisite, 3b. For men and women. Not for graduate credit.

104. Dalcroze Eurhythmics. (2) I. Wright
Understanding of the principles of eurhythmics as they relate to the study of music and dancing. Offered in 1937-38 and alternate years. Not for graduate credit.

174. Rhythmic Form and Analysis. (2) I. Wright
Study of rhythmic structure. The use of percussion instruments. Prerequisites, 102b, 104. Offered in 1938-39 and alternate years. Not for graduate credit.
175. Composition in Dance. (2) II. Wright
Study of dance composition from the standpoint of: form and group design in space; a single compositional factor or a combination of factors such as direction, level, tempo, intensity, etc.; dance content, theme, or idea. Prerequisite, 174. Offered in 1938-39 and alternate years. Not for graduate credit.

176. Theory of the Dance. (2) II. Wright
History, philosophy, and methods of directing the various types of dancing. Practice in producing a dance recital. Prerequisites, Rhythms 1a-1b, 3a-3b, Music 2. Offered in 1937-38 and alternate years. Not for graduate credit.

The Teaching of Rhythms and Dancing. (2) I or II. Wright
For description see Education 197r. Required of majors in rhythms.

Related Courses:
Home Economics 33, 125; Music 3a-3b.
A locker fee of $2 is charged the student who is registered in any one or in all of the above courses. Half of the fee is refunded upon the return of the locker key and equipment.

Students taking a physical education activity course and paying a locker fee will not be charged a separate fee for rhythms.

PHYSICS

Professor Warner (Head of the Department). Assistant Professors Roach, Brown.

The major: 24 units exclusive of 1a-1b or 17a-17b and including 50a-50b (except for students with credit in 1a-1b), 105a, 106b, 111a-111b, 118a-118b.

The supporting minor should be chosen from: chemistry, mathematics, astronomy, philosophy, geology, biology, engineering.

1a-1b. Engineering Physics. (5-5) Yr. Warner
Prerequisites for 1a: elementary physics, Mathematics 20, 24, and enrollment in Mathematics 100a. Four lecture and recitation periods, one three-hour problem period, and one two-hour laboratory period. Prerequisites for 1b, 1a and enrollment in Mathematics 100b. Fee, $4 each semester.

17a-17b. General Physics. (4-4) Yr. Brown
General physics for all students in College of Liberal Arts and College of Education. Three lectures and one three-hour laboratory period. Fee, $2 each semester.

50a-50b. Intermediate Physics. (3-3) Yr. Brown
Prerequisite to upper-division courses, except 120, but not required of students with 1a-1b credit. Prerequisite to 50a, 1b or 17b; prerequisite to 50b, enrollment in Mathematics 100a.

104. Electrical Measurements. (2) I. Roach
Sensitive galvanometer studied in detail. Advantage of critical damping; current, voltage, coulomb and flux calibrations; magnetic properties of iron; potentiometer. One lecture and one three-hour laboratory period. Prerequisites, Physics 1b or 17b and Mathematics 100b. Fee, $4.

105a-105b. Thermodynamics and Theory of Heat. (2-2) Yr. Warner
Laws of thermodynamics, radiation, kinetic theory of gases, heat measurements. Two lectures and one three-hour laboratory period. Prerequisites, Physics 1b or 17b, Mathematics 100b, and registration in Chemistry 1a or 2a. Offered in 1937-38 and alternate years.

106a-106b. Theory of Optics. (2-2) Yr. Warner
Prerequisites, Physics 1b or 17b and registration in Mathematics 100a. Offered in 1938-39 and alternate years. 106a: Geometrical optics, spectroscopy, and photometry. 106b: Physical optics; interference, diffraction, polarization, double refraction. Physics 106a is not prerequisite to 106b.
108. Electron Tubes. (2) II. Roach
Static and dynamic characteristics of thermionic tubes; audio and radio
frequency measurements. One lecture and one three-hour laboratory period.
Prerequisite, 104. Fee, $5.

110. Radio Communication. (2) I. Picard
Oscillating circuit conditions; resonance; capacity and inductance coupling;
vacuum tube transmission; modulation receivers. Prerequisite, 108.

111a-111b. Electricity and Magnetism. (3-3) Jr. Brown
An introductory course in electricity and magnetism theory. Three lec-
tures and recitation periods. Prerequisites, Physics 1b or 50b and enrollment
in Mathematics 100b. Offered in 1937-38 and alternate years.

118a-118b. Modern Physics. (3-3) Jr. Roach
An introductory course in modern physics. Three lectures and recita-
tion periods. Prerequisite, 1b or 50b. Offered in 1938-39 and alternate years.

120. Meteorology. (3) II. Brown
The physics of the atmosphere and its bearing upon weather. Prerequisite,
1a or 17a. Offered in 1937-38 and alternate years.

201a-201b. X-Ray Studies. (3-3) Jr. Brown
X-ray theory and applications of X rays. Three lectures and recita-
tion periods. Prerequisites, Physics 118, Chemistry 1b, Mathematics 100b.
Offered in 1938-39 and alternate years.

204a-204b. Atomic Spectra. (3-3) Jr. Roach
Studies in the theory of spectra; applications to physics, chemistry, and
astronomy. Prerequisites, Physics 118b, Chemistry 1b or 2b, Mathematics
100b. Offered in 1938-39 and alternate years.

205. Heat Radiation and Quantum Theory. (3) I. Brown
A study of the laws of heat radiation by applying the principles of thermo-
dynamics, statistics, and quantum theory. Prerequisites, Physics 105a-105b,
Chemistry 1b, Mathematics 100b. Offered in 1938-39 and alternate years.

212a-212b. Seminar. (1-1) Jr. Warner
Current literature and selected topics. Students may take this course more
than once for credit. Primarily for mathematics and physics majors.

219. Analytical Dynamics. (3) II. Brown
A study of theoretical mechanics by application of generalized co-ordinates.
Prerequisites, Physics 50b, Mathematics 100b. Offered in 1938-39 and alternate
years.

224. Special Study. (1 to 4) I or II. Warner-Soller-Brown
Readings, conferences, and special individual investigations. Primarily for
those majoring or minoring in physics but open to other graduates and Seniors
upon approval of the instructor in charge and the Head of the department.
May be pursued more than once for credit with change of subject matter.

230. Research. (1 to 4) I or II. Staff
Fee, $1 per unit.

Physics Honors. (2-2) Jr.
For particulars see page 114.

PLANT BREEDING

Professors Bryan (Head of the Department), Pressley.

108. Genetics. (3) II. Bryan-Pressley
Fundamental principles of breeding. Heredity and variation. Principles
of plant and animal improvement. Prerequisite, Botany 1 or Zoology 4. Two
lectures and one three-hour laboratory period. Fee, $3.

128. Plant Breeding. (3) II. Bryan-Pressley
Critical examination of the various theories of heredity and their applica-
tion to plant breeding. Prerequisites, Botany 103 and Plant Breeding 108.
Two lectures and one three-hour laboratory period. Fee, $3.
138. Elementary Biometry. (2) II. Pressley

Problems of heredity and variation as applied to plant and animal breeding, of field experiments, of sampling, and selection. Prerequisite, 108. Two lectures.

290. Advanced Studies. (2 to 4) I or II. Staff

In consultation with the Head of the department and the instructor concerned. Fee, $1 per unit.

290. Research. (4 to 6) I or II. Staff

Concurrent registration required in 291. Work may be arranged with cooperative research agencies. Fee, $1 per unit.

291. Special Discussions. (1) I or II. Staff

Required of students registered in 290.

PLANT PATHOLOGY

Professor J. G. Brown (Head of the Department).
Associate Professor Streets.
Instructor Butler.

105. Pathology. (4) I. Brown

The principal groups of parasitic fungi and the plant diseases caused by them, together with methods of control. External factors causing pathological conditions in plants. Prerequisites, Botany 1 and Bacteriology 107. Two lectures and two three-hour laboratory periods. Fee, $3.

135. Mycology. (4) II. Brown

The morphology and classification of the fungi. Prerequisites, Botany 1, 122, and Bacteriology 107. Two lectures and two three-hour laboratory periods. Fee, $3.

145. Diseases of Cereals, Fiber, and Forage Crops. (4) I. Streets

Bacterial and fungus diseases affecting cereal, fiber, and forage crops. Special emphasis upon diseases in the Southwest. Prerequisites, Botany 1 and Bacteriology 107. Two lectures and two three-hour laboratory periods. Fee, $3.

155. Diseases of Fruit Trees, Nut Trees, and Truck Crops. (4) II. Streets

This course and 165 parallel 145 and have the same prerequisites, class hours, and fee.

165. Diseases of Forest Trees, Shade Trees, and Ornamentals. (4) II. Streets

175. Elementary Forest Pathology. (4) II. Brown

The commoner forest-tree diseases of the Southwest. Excursions to the Santa Catalina and Santa Rita forest areas in addition to the regular work. Students pay for field trips. Prerequisites, Botany 4, 16, Plant Pathology 105. Two lectures and two three-hour laboratory periods including field trips. Laboratory fee, $3.

225. Pathological Histology and Cytology. (4) I. Brown

Changes induced in the host by parasites belonging to the plant kingdom and by unfavorable environmental and physiological conditions. Prerequisites, Botany 103, 122, 132, 142, and Plant Pathology 105. Two lectures and two three-hour laboratory periods. Fee, $3.

275. Physiology of Parasitism. (4) I. Brown

The physiological interrelations of host and parasite. Special attention to plants of the Southwest. Prerequisites, Botany 123 and all courses in plant pathology or their equivalent. Fee, $3.

280. Advanced Studies. (2 to 4) I or II. Staff

In consultation with the Head of the department and the instructor concerned. Fee, $1 per unit.

290. Research. (4 to 6) I or II. Staff

Concurrent registration required in 291. Work may be arranged with cooperative research agencies. Fee, $1 per unit.
291. Special Discussions. (1) I or II. 
Located of students registered in 290.

POULTRY HUSBANDRY

Professor Embleton (Head of the Department).
Associate Professor Hinds.

1. Principles of Poultry Husbandry. (2) I. Embleton
The major phases of the poultry industry. One lecture and one three-hour laboratory period. Laboratory fee, $2. Prerequisite to all other poultry courses.

101. Poultry Anatomy and Diseases. (2) I. Hinds
The structure of the fowl, its diseases, including prevention and treatment. Laboratory survey and dissection. One lecture and one three-hour laboratory period. Offered in 1938-39 and alternate years. Laboratory fee, $2. Prerequisites, Poultry 1, Zoology 4, and Bacteriology 107.

102. Poultry Breeding and Judging. (3) I. Embleton
The origin, history, and classification of breeds of poultry along with judging of breeding pens and mating. Offered in 1937-38 and alternate years. One lecture and two three-hour laboratory periods. Not for graduate credit. Prerequisite, 1.

103. Economics of Poultry Management. (3) II. Embleton
The business end of poultry husbandry. The work is handled through problems having an economic bearing on the poultry business. Offered in 1938-39 and alternate years. Two lectures. Prerequisite, 1.

104. Poultry Nutrition. (3) I. Hinds
Physiology of digestion; the principles of feeding for egg production, growth, and fattening; the compounding of rations. Offered in 1937-38 and alternate years. Prerequisites, Poultry 1, Chemistry 50.

105. Principles of Poultry Marketing. (3) II. Hinds
The method of handling, packing, and grading eggs; killing, cooling, grading, and packing poultry; storage of poultry and eggs. Offered in 1937-38 and alternate years. Two lectures and one laboratory period. Laboratory fee, $2. Prerequisites, Poultry 1, Economics 1a.

106. Incubation and Brooding. (3) II. Hinds
In addition to the lectures, practical work with incubators and brooders, over a six-weeks' period, will be given at the poultry farm. Not for graduate credit.

201. Methods in Research. (3) I. Embleton
Research methods studied by means of an original problem, including the outlining of problem, bibliography, formulating original data, and writing final results. Offered first semester 1937-38 and alternating semesters. Laboratory fee, $2 each semester.

202. Research in Poultry Husbandry. (2 to 4) I or II. Embleton
Graduate students specializing in poultry husbandry may elect a thesis.

SPANISH

Professors Fitz-Gerald (Head of the Department), Brooks, Post, Nicholson.
Assistant Professors Nichols, Eberling.*
Instructor Henry.

The major: 24 units above 1b, including 110a-110b and such other courses as the Head of the Department shall advise.

The supporting minor, preferably in not more than two subjects, should be chosen from: classical literature, English, French, German, history, philosophy, art or music, provided that with art or music there be not less than 8 units of a second foreign language.

* On leave 1937-38.
The teaching minor consists of 15 units above 1b, and must include 3a-3b, 13a-13b, and 14a. Students offering two years of Spanish for entrance must include 110a and 194b.

**SPANISH**

1a-1b. **Elementary Spanish. (4-4) Yr.** Nicholson and Staff
A beginning course that includes grammar essentials and translation, emphasizing especially accurate pronunciation and oral work. Credit toward graduation in 1a is allowed only after completion of 1b.

3a-3b. **Intermediate Spanish. (4-4) Yr.** Nichols and Staff
Introduction to systematic syntax accompanied by reading of modern books. Prerequisite, 1b or two years of high-school Spanish.

13a-13b. **Elementary Conversation. (1-1) Yr.** Post and Staff
A laboratory course three periods a week with no preparation. Sections limited to fifteen students. Prerequisite, 3b or four years of high-school Spanish. Required for the department’s recommendation to teach, but may be taken only in connection with a literary course in Spanish.

14a-14b. **Elementary Composition. (2-2) Yr.** Staff
Required for the department’s recommendation to teach. Prerequisite, 3b or four years of high-school Spanish.

103a-103b. **Advanced Composition. (2-2) Yr.** Post
A practical course in writing Spanish; special stress on grammar and syntax; formal translation and original themes. Prerequisites, 14b for 103a; 103a for 103b. Not for graduate credit.

109a-109b. **Literature of the Golden Age. (3-3) Yr.** Brooks
Literary movements of the Golden Age of Spanish literature, 1550-1700, with reading of representative authors. Prerequisite, 110b.

110a-110b. **Introduction to Spanish Literature. (3-3) Yr.** Brooks-Post
Literary movements of the last three centuries and the reading of representative texts from the most important authors of the period. Prerequisite to all further upper-division courses. Not for graduate credit. Prerequisite, 3b or four years of high-school Spanish.

111a-111b. **Spanish Literature of the Nineteenth Century. (3-3) Yr.** Post
Chief literary movements of the nineteenth century; neoclassicism, romanticism, realism, postromanticism in the novel and the drama. Prerequisite, 110b.

113a-113b. **Spanish Literature of the Twentieth Century. (3-3) Yr.** Nicholson
Present literary tendencies of Spain—special reference to national life and character. Representative writers since 1900. Prerequisite, 110b.

116a-116b. **Spanish-American Literature. (3-3) Yr.** Nichols
The principal movements and authors of Spanish America. Prerequisite, 110b.

123a-123b. **Advanced Conversation. (1-1) Yr.** Post
Open to students who have had 13b or its equivalent, but may be taken only in connection with other upper-division courses. Not for graduate credit.

194a-194b. **Phonetics and Advanced Grammar. (2-2) Yr.** Nicholson
194a: A practical study of phonetics.
194b: Extensive study of grammar. Required for the department’s recommendation to teach. Not for graduate credit.

The Teaching of Spanish. (3) I. Nicholson
For a description see Education 197k. Required of students in the College of Education majoring in Spanish.
224a-224b. The Novela of the Golden Age. (3-3) Yr. Fitz-Gerald
Lectures on the cultural history of the period and on the Novelistic Movement. Offered in 1937-38 and alternate years.

225a-225b. The Comedia of the Golden Age. (3-3) Yr. Fitz-Gerald
Lectures on the cultural history of the period and on the Dramatic Movement. Offered in 1938-39 and alternate years.

Spanish Honors. (2) Yr.
For particulars see page 114.

ROMANCE PHILOLOGY

205a-205b. Introduction to Romance Philology: Phonology and Morphology. (3-3) Yr. Fitz-Gerald
206a-206b. Oldest Monuments of the Spanish Language. (3-3) Yr. Fitz-Gerald
Phonology, morphology, and paleography. The Poema del Cid and Gonzalo de Berceo's Santo Domingo de Silos. Offered in 1937-38 and alternate years.

240a-240b. Medieval Spanish Literature. (3-3) Yr. Fitz-Gerald
Lectures on the various movements in medieval Spanish literature through the reign of Juan II. Offered in 1938-39 and alternate years.

250a-250b. Research. (3-3) Yr. Staff

ITALIAN

1a-1b. Elementary Italian. (4-4) Yr. Brooks
Grammar; pronunciation; oral drill; reading from representative selections, both prose and verse. Credit toward graduation in 1a is allowed only after completion of 1b.

SPEECH

Professor Cable (Head of the Department, Director of Forensics).
Instructor Mattingly.

The speech work as here organized comprises five main divisions: original speaking, interpretative reading, speech science, speech correction, and the teaching of speech.

Attendance at certain public lectures, reading recitals, debates, and plays is required of all registered students in speaking courses, as laboratory projects.

Students majoring in speech, before being recommended for a degree, will demonstrate a certain standard of platform proficiency, to be determined by the speech staff. Each one will also, during the last semester in residence before graduation, give a public lecture, literature recital, or lecture recital as a requirement for the bachelor's degree.

The major: a minimum of 24 units, consisting of 2a-2b, 5, and 167; the remainder to be chosen in such manner as to include at least three of the five main divisions.

The supporting minor shall consist of 20 units in a group of related subjects which supplement the major. Major students specializing in original speaking are advised to minor in economics, sociology, history, political science, psychology, or philosophy; those specializing in interpretation should minor in drama, rhythmics, art, English, or psychology; those emphasizing speech science or speech correction should minor in zoology, bacteriology, or psychology, with certain work in the physics of light and sound, and in biochemistry; and students stressing
the teaching of speech should minor in related subjects that they may wish to teach. The last group must also elect certain education courses required for a teacher's certificate.

2a-2b. Principles of Speech. (3-3) Yr.  
Introduction to the field of speech, providing training in the fundamentals of effective speaking and reading for a variety of occasions, both public and private. Principles and practice are co-ordinated, with emphasis on adjustment and development of the speaking personality. This course or its equivalent is required of all majors and is prerequisite to all other courses in speech. Sections limited to 20.

5. Voice and Diction. (2) I or II.  
Special attention to the elimination of voice and language difficulties and the cultivation of effectiveness in these respects, including articulation and enunciation, vocabulary, pronunciation, and grammar. Designed for the first half of the Sophomore year. Sections limited to 20.

12. Conference Speaking and Parliamentary Law. (3) II.  
Planning and conduct of the personal, business, sales, and group conference, and the deliberative assembly. Principles and practice of parliamentary law.

39. Choral Reading. (1) I or II.  
Unison presentation of choric poetry and rhythmic prose. Organization and conduct of speaking choirs. Survey of materials used in choric speech. Designed for the second half of the Sophomore year.

116. Speech Composition. (3) I.  
The construction of the leading types of speeches, with constant practice in speechmaking. Offered in 1938-39 and alternate years. Not for graduate credit.

118. Persuasive Speaking. (3) II.  
The principles of motivating human conduct. Constant practice in applying the principles in speeches. Offered in 1938-39 and alternate years. Not for graduate credit.

125a-125b. Argumentation and Debate. (3-3) Yr.  
Offered in 1937-38 and alternate years. Not for graduate credit.

125a: The principles and practice of argumentation and debate, including brief drawing and debate strategy, but excluding logical theory. Weekly debates.


136. Oral Reading and Interpretation. (3) I.  
The principles and practice of oral reading and the interpretation of various forms and moods of literature. Affords training in voice improvement, cultivation of imagination and discernment, emotional development and control, and effective action. Not for graduate credit.

137. Impersonative Reading. (3) II.  
Further freeing of mind, body, and voice, and training in understanding and discernment, imagination, and mental and muscular adaptability through varied types of impersonative reading. Program presentation. With 136 it forms a year course. Not for graduate credit.

167. English Phonetics and Pronunciation. (3) I.  
English speech sounds and their relation to the organs of speech; principles and drill in enunciation and pronunciation. Adapted to the needs of teachers, supervisors of reading, and those desiring to improve their speech. Not for graduate credit.

182a-182b. Advanced Problems in Speech. (2-2) Yr.  
Staff
182a: A pragmatic analysis of the field of speech, methods and techniques in library, laboratory, and independent research; lectures, readings, reports. Methods of thesis preparation.
182b: Directed investigation in some definite phase of the field of speech.

The Teaching of Speech. (3) II.  
For description of the course see Education 197s. Required of all students in the College of Education majoring in speech. Prerequisites, Education 134 and 12 units in speech.
ZOLOGY

Professors G. T. Caldwell (Head of the Department), Vorhies, Ball. Assistant Professors Wehrle, Hannum. Instructor Ryerson.

The major: 24 units above a basic course of 8 units; this basic course may consist of 4 and 8, or 4 and 44. The major must include 45 and 146 but shall not include 102 or 121. Sixteen units must be upper-division.

The supporting minor should be chosen from: bacteriology, botany, chemistry, geology, mathematics, physics, or psychology.

The teaching minor must include 4, 45, 124 or 125, and additional courses to total at least 16 units.

4. Elementary Zoology. (4) I. Ball-Ryerson-Assistants

Structure, physiology, development, and behavior of animals from the biological viewpoint. With 8 or 44 it forms a year course. Two lectures and two three-hour laboratory periods. Fee, $5.

8. Mammalian Anatomy. (4) II. Hannum

Gross anatomy as exemplified by the cat. Required of all physical education majors. Physical education majors, only, may register for one lecture and two three-hour laboratory periods and receive 3 units of credit. Prerequisite, 4. One lecture and three three-hour laboratory periods. Fee, $5.

44. Invertebrate Zoology. (4) II. Ball

Morphology, physiology, ecology, and taxonomy of invertebrates. Prerequisite, 4. Two lectures and two three-hour laboratory periods. Fee, $5.

45. Comparative Anatomy. (4) I. Hannum

Morphology of representative chordates. Required of all zoology majors. Prerequisite, 4. Two lectures and two three-hour laboratory periods. Fee, $5.

57. Elementary Physiology. (4) I. G. T. Caldwell

Physiological processes of the human body. Primarily for students in physical education and the general undergraduate. Prerequisite, 8. Three lectures and one three-hour laboratory period. Fee, $5.

101. General Entomology. (4) I. Wehrle

Introduction to the structure, relationships, and classification of insects. Each student makes a small collection for study. Prerequisites, 4, and 8 additional units in zoology or botany. Fee, $2.

102. Economic Entomology. (4) II. Wehrle

Insect pests of field, garden, and orchard; their life histories, habits, identification, and methods of control. Laboratory and practical field work. Prerequisite, 101. Fee, $4. Offered in 1938-39 and alternate years.

111. Evolution. (2) I. Ball

History, modern theories, factors, and mechanism of organic evolution and its influences on modern thought. Prerequisite, 8 units of zoology or botany. Two lectures. Offered in 1937-38 and alternate years.

112. Medical and Veterinary Entomology. (3) II. Wehrle

Insects and other arthropods in relation to disease in man and domestic animals. Two lectures and one laboratory period. Prerequisites, 4, and 12 additional units in zoology. Fee, $2.50. Offered in 1937-38 and alternate years.

14. Eugenics. (2) I. Ball

Factors tending towards the development, or degeneration, of the human race, with interpretations of outstanding families and of degenerate stocks. Prerequisite, 8 units in biology, geology, psychology, or sociology. Two lectures. Offered in 1938-39 and alternate years.

116. Heredity. (2) II. Ball

Factors governing the inheritance of traits and characters in animal and human life. Prerequisites, 4, and 8 additional units in science. Two lectures.
120. Animal Ecology. (3) I.
   Vorhies
   Animal-plant communities and interrelationships: the web of life; ecological aspects of management; conservation and human affairs. Two lectures and one field period. Prerequisites, Zoology 4, Botany 1, and 8 additional units in biology. Fee, $5.

121. Wild Life Management. (3) II.
   Vorhies
   Problems and principles of conservation and scientific management of wild life, including game birds, game mammals, rodents, predators, and fur bearers—the interrelated community. Two lectures and one field period. Prerequisites, Zoology 4, Botany 1, and 8 additional units in biology. Fee, $5.

123a-123b. Systematic Entomology. (6-3) Yr.
   Wehrle
   Classification of insects into families and genera, and technique of preparing and mounting special groups. One lecture and two laboratory periods. Prerequisite, 101. Fee, $3 each semester.

124. Ornithology. (3 to 4) II.
   Vorhies
   Structure, classification, and economic relation of birds. Foundation for game management or museum work. Two lectures and one or two laboratory or field periods. Prerequisite, 45. Fee, $2 or $3, according to units elected. Offered in 1938-39 and alternate years.

125. Mammalogy. (3) II.
   Vorhies
   An introduction to the study of mammals offering training in this group like that afforded by the course in ornithology. Two lectures and one laboratory or field period. Prerequisite, 8 or 45. Fee, $3. Offered in 1937-38 and alternate years.

143. Mammalian Physiology. (4) I.
   G. T. Caldwell
   Physiology of the supporting and motor tissues, the nervous system, and the special senses. Prerequisites, Zoology 8 or 45 and Chemistry 1b or 2b. Three lectures and one three-hour laboratory period. Fee, $5.

144. Mammalian Physiology. (4) II.
   G. T. Caldwell
   Physiology of circulation, respiration, digestion, absorption, and excretion. Prerequisite, Chemistry 103a or 40. Three lectures and one three-hour laboratory period. Fee, $5.

146. Animal Histology. (4) II.
   Hannum
   Microscopic anatomy of animal tissues, and the technique involved in their preparation. Required of all zoology majors. Prerequisite, 8 or 45. Two lectures and two three-hour laboratory periods. Fee, $8.

147. Vertebrate Embryology. (4) II.
   G. T. Caldwell
   Development of the vetebrate embryo, with particular emphasis on organogenesis. Prerequisite, 45. Two lectures and two three-hour laboratory periods. Fee, $5.

149. Parasitology. (4) I.
   Hannum
   Morphology, biology, and control of parasites of man and domestic animals. Prerequisite, 16 units of zoology or bacteriology. Two lectures and two three-hour laboratory periods. Fee, $5.

191a-191b. Elementary Zoological Problems.
   Staff
   (2 to 4-2 to 4) Yr.
   Problems for properly qualified Juniors or Seniors after consultation with instructors. Credit will be adjusted in accordance with the work accomplished. Fee, $1 per unit.

216a-216b. Zoological Research. (2 to 4-2 to 4) Yr.
   Staff
   On consultation, problems along the following lines may be undertaken: invertebrate and vertebrate morphology, physiology, ecology, embryology, and economic zoology. Results must be presented as a thesis or in form for publication. Credit in accordance with work accomplished. Fee, $1 per unit.

217a-217b. Entomological Research. (2 to 4-2 to 4) Yr.
   Staff
   Under the instructors in taxonomic, economic, or morphological entomology. Results must be presented as a thesis or in form for publication. Credit according to work accomplished. Fee, $1 per unit.
The Teaching of Zoology. (3) I. Vorhies

For description see Education 197z. Required of all students in the College of Education majoring in zoology.

Zoology Honors. (2-2) Yr.

For particulars see page 114.

Related Courses:

The following courses may be included in a zoology major: Bacteriology 107, 157, and Plant Breeding 108.

Zoology Club.

The first and third Wednesdays of each months at 4:40. Senior and graduate students in the department are expected to attend. Students in all courses are invited.
DEPARTMENTS OF RESEARCH
AND EXTENSION

AGRICULTURAL EXPERIMENT STATION

ORGANIZATION AND WORK

The Agricultural Experiment Station is legally a division of the University of Arizona College of Agriculture. The purpose of the Agricultural Experiment Station is to aid "in acquiring and diffusing useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiments respecting the principles and application of agricultural science."

The activities of the Experiment Station include research and experimentation in agricultural chemistry and soils, agricultural economics, agronomy, animal husbandry, botany, entomology, home economics, horticulture, irrigation, dairy husbandry, plant breeding, plant pathology, poultry husbandry, and rural sociology.

The Agriculture Building, which was completed September, 1915, offers ample room for research, educational work, and extension in agriculture, and affords an attractive center for the agricultural activities of the state. From this base, the great agricultural valleys of the state—the Salt River, the lower Colorado, the Casa Grande, the upper Gila, and the Santa Cruz are conveniently accessible for field and observation work.

Owing to wide variation in agricultural conditions in Arizona, it has been found of advantage to establish branches of the Experiment Station in various parts of the state, to do work where conditions are most satisfactory for its accomplishment.

The main Experiment Station farm is located near Mesa, in the Salt River Valley, which is intermediate in elevation and in mean yearly temperature with respect to the irrigated valleys of southern Arizona. The results obtained are capable therefore of general application to the southern part of the state.

The University Date Garden is situated near Tempe, where extensive experimentation with the growth and fruiting of the date palm and studies on maturation and storage of the fruit have been of great value to this industry in the Southwest.

The branch station near Yuma, including a tract of land in the Colorado River Valley proper and another on the Yuma Mesa, furnishes experimental data concerning fruits, nuts, vegetables, and farm crops of this part of the state. An additional tract on the Yuma Mesa is being developed for demonstrational work with field crops, livestock, and vegetables.

The University Farms afford facilities for study and experimentation near Tucson. Laboratories, greenhouses, and gardens on the University grounds serve a similar purpose.

The results of Experiment Station work are published as bulletins, circulars, and reports of the station and are used widely in extension work with the agricultural interests in the state as well as in classroom teaching.

The Agricultural Experiment Station is financed from funds appropriated by Congress under the Hatch, Adams, Purnell, and Bankhead-Jones acts, supplemented by appropriations made by the legislature of Arizona.
The purpose of the Agricultural Extension Service as set up in the congressional Smith-Lever Act of 1914 is to aid in diffusing useful and practical information on subjects relating to agriculture and home economics and to encourage application of this information. This work is carried out by giving instruction and practical demonstrations in agriculture and home economics to persons not taking course instruction at the University of Arizona. In addition to demonstrations, publications and other means are used for disseminating agricultural information.

Federal funds for carrying on agricultural extension work are provided principally by the Smith-Lever, Capper-Ketcham, and Bankhead-Jones funds. State and county funds are also available for this work. Of fourteen counties in the state, thirteen are making regular annual appropriations for extension work in co-operation with the Agricultural Extension Service. The Twelfth Legislature of the state appropriated $21,000 to the Agricultural Extension Service to be used for the control of rodents, in co-operation with the United States Biological Survey, for the biennium ending June 30, 1937.

During the year ending June 30, 1937, the Extension Service employed thirty-eight people in administration and subject-matter activities. Of these, thirteen were county agricultural agents, four assistant county agents, seven home demonstration agents, one assistant home demonstration agent, eleven subject-matter specialists and two administrative officials.

The home demonstration group has emphasized a program bearing on clothing, home furnishings, home management, home preservation of foods, and nutrition. Boys' and girls' club work reached practically every rural community in the state. County agents have emphasized improved practices in livestock production, dairying, field-crop production, irrigation methods, rodent control, and marketing. The program of county extension workers is strengthened by assistance given by subject-matter specialists. An attempt is being made to serve every community in the state that desires such service.

Since 1933 the Extension Service has been an agency representing the Agricultural Adjustment Administration, United States Department of Agriculture. During the year 1936 and continuing into 1937, the Extension Service has had general supervision of Arizona activities under the Agricultural Conservation Program. In the conduct of this work in the state, the Extension Service is assisted by the state Agricultural Conservation Committee, made up entirely of producers, and by ten employed secretaries, including the executive secretary of the state committee.

While the major portion of Extension Service activities is carried on through county workers, farmers are also given agricultural information through radio programs and through the press. Five radio stations broadcast new and interesting information on farm and ranch life by means of electrical transcription. These talks are prepared by members of the College of Agriculture and are transcribed by the Agricultural Extension Service. Much of the information in these talks is also made available to ranch and farm families through farm magazines. "Farm Flashes and Housekeepers' Chats" are sent daily to all of the radio stations in Arizona. The latest scientific developments in agriculture and home economics and seasonal information in these two fields are dispensed through the press.

Under a memorandum of understanding between the Extension Service and the United States Resettlement Administration, a close co-operation
is provided between the work done by rural rehabilitation employees and county extension workers. Another memorandum of understanding between the Extension Service and the United States Soil Conservation Service provides for co-operation.

Other Extension Service activities include the furnishing of judges and exhibits for fairs, provision of speakers for farmers' meetings, assistance in connection with outbreaks of disease among animals, insect infestation, and plant diseases.

ARIZONA BUREAU OF MINES

ORGANIZATION AND ACTIVITIES

The Arizona Bureau of Mines was created by act of the legislature in 1915. Its objects are to make investigations and disseminate information which may lead to the development and expansion of the state's mineral industries. Among the many lines of activity in which the Bureau engages, the following have proved especially important and valuable:

1. The preparation and publication of bulletins containing authoritative information on a wide range of topics of interest to prospectors, miners, and others concerned with the development of Arizona's mineral resources and industries. The bulletins are distributed free of charge upon request, and 129 have already been issued.

2. The free classification of mineral and rock specimens. Besides naming rocks, and naming and giving the composition of minerals, the bureau makes free qualitative tests for important elements, and answers inquiries concerning the probable market for and the economic value of ore similar to samples submitted. When assays, quantitative chemical analyses, microscopic or thin sections are desired, they are furnished at rates established by law, a schedule of which will be submitted on request.

3. The accumulation of geologic data and the making of topographic and geologic maps and reports. In co-operation with the United States Geological Survey, a large-scale base map (nongeological), a reconnaissance geologic map, and a topographic map (100-meter contours) of the entire state have been completed, and are ready for distribution. A voluminous, illustrated résumé of the geology of Arizona is also available. Reports on the geology and mineral resources of counties and districts are in preparation. Field investigations incident to these activities have yielded a great deal of new and valuable information concerning promising undeveloped occurrences of both metallic and nonmetallic minerals (clay, gypsum, coal, etc.).

4. The technical education of miners and prospectors through lectures and miners' institutes held in mining camps. This work has proved very successful.

5. The fostering of research on Arizona mining and metallurgical problems. Although some of this work is done by experts employed by and under the supervision of the Bureau, the greater part is accomplished through a co-operative arrangement with the United States Bureau of Mines Experiment Station on the campus of the University. Under this agreement the Arizona Bureau of Mines provides research workers who operate under the direction of the Supervising Mining Engineer and Metallurgist of the United States Bureau of Mines Experiment Station.

One line of research successfully undertaken several years ago resulted in the development of a practical electrical method for locating sulphide ore bodies.

6. The collection and dissemination of statistics relating to the mineral industries of the state.
7. The operation of a clipping bureau that collects and files all items relating to Arizona mines and minerals that appear in Arizona newspapers and in many technical periodicals.

8. The dissemination of publicity relating to Arizona’s mineral industries.

9. The organization of a general information bureau that attempts to answer as completely as possible inquiries regarding mines and mining, metallurgy, geology, mineralogy, mining law, and other related subjects. The one-word policy of the bureau is “Service” to the state and to those interested in the development of its mineral resources, and the assistance and advice of its staff are freely offered to all.

UNIVERSITY EXTENSION DIVISION

PURPOSE AND AIMS

The purpose of the University Extension Division is to make available, as largely as possible, to every community and every individual in the state the advantages of general equipment, educational training, and specialized information represented on the University campus.

ORGANIZATION FOR SERVICE

Department of Extension Instruction

Bureau of Correspondence Courses—For the convenience of those who are unable to attend the University a well-rounded curriculum is offered at a nominal fee in selected subjects carrying regular college credit. Approximately one half of the requirements for the bachelor’s degree may be met through correspondence or extension-class courses. Teacher re-certification requirements may also be met through such courses.

Bureau of Extension Classes—Local extension classes are organized under the direction of the University Extension Division in some of the larger communities of the state. A request from ten or more prospective students will usually be deemed sufficient for considering the organization of a class in a selected subject carrying regular college credit. A nominal registration fee is charged for all courses.

Department of Public Service

Bureau of Dramatics—Advice and help are offered in organizing dramatic clubs and in the solution of specific problems of any nature encountered in choosing and staging plays. A loan library of current plays, drama literature, and readings is available. All plays and books are lent for a period of two weeks. Borrowers pay the parcel-post charges on all shipments of materials.

Bureau of Lecture and Lyceum Service—Lecturers can be secured for commencements or other special occasions. Speakers can also be provided for educational lectures or lecture courses. This service is free, but the organization receiving the service is asked to meet the lecturer’s traveling and subsistence expenses. University talent as represented in lectures, readings, music, dramatics, and related arts will be introduced to interested communities of the state as often as opportunity permits.

Bureau of Library Extension—Library packages made up of materials bearing upon vital current topics are available. These packages consist of books, pamphlets and newspaper and magazine clippings; they are lent for periods of two weeks. Reading guides are available covering a wide range of the world’s best literature, biography, and history, as well
as trades, industries, and sciences. These guides have been prepared by the United States Bureau of Education and the American Library Association. They are designed for the benefit of persons who, without thought of college credit, desire to pursue reading along definite lines. A nominal fee will be charged for the pamphlets. This service is conducted in cooperation with the University Library.

Bureau of Publications—All University catalogues, bulletins, and pamphlets are edited and published by the Bureau.

Bureau of Visual Education—Moving pictures (16 mm. sound and silent), stereopticon slides, and film slides are available to anyone equipped with suitable projectors upon payment of a nominal rental or service charge. Exhibitors pay the express or parcel-post charges on all shipments of pictures.

Press Bureau—Timely items of special interest concerning the University as well as authentic information and data are disseminated regularly to the press.

EXTENSION CREDIT COURSES

General Information

Neither correspondence courses nor extension classes offer a short cut; they are organized to coincide as closely as possible with the corresponding courses offered in residence at the University and are usually given by instructors having charge of similar residence courses. The chief merit of such courses is that they offer the isolated student, teacher, housewife, and businessman the opportunity of advantageously using spare hours at home in pursuing studies for college credit under University tutelage.

Upon the satisfactory completion of a correspondence course or extension class, including the final examination, college credit will be granted. A unit (semester hour) of credit represents one class period per week for a semester of seventeen weeks, three hours of preparation being expected for each recitation.

College credit earned through correspondence or extension classes may be presented in partial or complete fulfillment of requirements for the granting or renewal of teaching certificates in Arizona. Credit in the course National and State Constitutions is accepted by the State Board of Education in fulfillment of the law requiring each teacher to pass an examination in this subject. Correspondence credit in education courses 109, 121, 131, and 160 is accepted in partial fulfillment of the requirements for the administrative certificate.

Regulations

No preliminary examinations or general prerequisites are required for registration in correspondence courses or extension classes, except in certain advanced courses. Credit will not be granted in those courses requiring prerequisites unless satisfactory evidence is presented that such prerequisites have been fully met. If the correspondence or extension-class student should later matriculate at the University, he must, of course, comply with the requirements for admission to residence courses.

Registration fees for correspondence courses and extension classes are arranged on the basis of the number of units in a given course, at a rate of $5 per unit: thus a 2-unit course requires a registration fee of $10, while a 3-unit course requires $15. Fees will ordinarily not be refunded because of a student's inability or unwillingness to pursue a course which he has begun.
Students may register for as many courses at a time as they feel they can pursue with profit; ordinarily, however, it is better to register for and complete one course at a time.

Correspondence courses or extension classes may not be undertaken by a student while in regular attendance at an institution of learning without the knowledge and written consent of the authorities of such institution. Students taking residence work at the University of Arizona may not register for correspondence courses or extension classes without the written permission of the Registrar. Such permission must accompany application for correspondence or extension instruction before registration will be accepted. Students who are under suspension from the University for any reason whatever may not register for correspondence courses or extension classes until the period of suspension is over.

Students are expected to purchase their own texts and supplies. These may be secured direct from the Co-operative Book Store on the campus. Supplementary texts for parallel reading or reference may be borrowed from the University Library when not in use by residence students.

A final examination must be passed satisfactorily in each course before credit is awarded. Examinations in correspondence courses may be taken either at the University or in the student's home town under conditions approved by the University Extension Division.

A maximum of 60 units of credit earned through correspondence courses, extension classes, or both may be applied toward a bachelor's degree, but the Extension Division does not necessarily undertake to furnish that number of suitable units to each applicant.

The Extension Division reserves the right to reject any registration for correspondence courses or extension classes if it feels that the best interests of the student or of the Extension Division will not be served through such registration.

**Correspondence Courses**

A correspondence course is presented in a number of assignments, ordinarily fifteen assignments for a 2-unit course, and twenty, for a 3-unit course. Approximately six hours of preparation are expected on each assignment, since an assignment represents approximately a week's work in residence. Each assignment contains full directions for study, including references to the texts, necessary suggestions or assistance, and questions to be answered by the student.

Correspondence courses may be begun at any time and may be completed as rapidly as the character of the work will permit. Students are allowed a maximum of twelve months from date of registration in which to complete the work for which they have registered. If work is not completed within the allotted time, a time extension of twelve months from date of registration expiration may be secured through the payment of a nominal fee for each course. This time extension privilege may be exercised only within six months from date of expiration of the original registration.

A nominal charge will be made for transferring enrollments from one course to another; such enrollment transfer is allowed only within six months from date of original registration and provided no work has been done by the student on the original course. Should a student receive a failing grade on the final examination and be granted the privilege of taking a second, a nominal fee will be charged for the accommodation. The second examination must be taken before the expiration of the original registration. If no work has been done on a course and the student wishes to withdraw his registration, all fees will be refunded with the exception of a nominal sum to cover registration costs. Such refund of fees will be made only if the registration is withdrawn within six months from date of original registration.
Extension Classes

Extension classes meet regularly with extension instructors and comply with the University regulations as to course content, prerequisites, total number of class recitation hours, final examination, etc. The time and length of individual class recitations may be decided mutually between the instructor and the students at the first meeting of the class.

Each extension class is offered as a 2- or 3-unit course. In a 2-unit course thirty recitation clock-hours are required, whereas forty-five recitation clock-hours are required for a 3-unit course. Auditors are required to pay the usual registration fee, but need not submit themselves to recitations or examinations. Auditors do not earn credit for courses audited.

An extension class in a particular subject will ordinarily be organized in Tucson if ten or more paid registrations are secured. In individual cases a class may be organized if the prospective students are willing to pay their prorated share of all expenses incident to conducting the class. Such payment shall constitute the registration fee for each student in the class.

If the class is organized students will be notified of the place and time of the first meeting. If the class is not organized, all fees will, of course, be returned. Registrations of extension-class students must be completed by the second regular meeting of the class. Unless registration is completed a student may not attend class meetings after the second regular meeting.

Residence credit will be allowed for all extension courses conducted in Tucson by University instructors under conditions similar to those governing regular residence classes, provided that the student desiring such residence credit has previously taken, is taking, or shall subsequently take, regular residence work at the University.

Graduate courses given as extension classes in Tucson by the University Extension Division will be allowed graduate credit when they meet all the requirements of those courses offered on the campus, and are taught by instructors of the regular University staff who in regular sessions teach upper-division work. Graduate credit will also be given for upper-division courses, which meet the requirements just stated, if the student has registered for graduate credit with the consent of the instructor and the Graduate Study Committee, and provided the student receives a 1 or 2 in the course.

Address all inquiries to the Director, University Extension Division, University of Arizona, Tucson.

ARIZONA STATE MUSEUM

The Arizona State Museum, established by law as an integral part of the University, is maintained as an educational factor in the institution and the state. Its chief aim is to present the life history of Arizona and the great Southwest. Its archaeological collections emphasize the conditions and the achievements of the ancient cave, cliff, and Pueblo peoples of the region; and its ethnological collections present the manufactured products of the various modern Indian tribes. Its natural history collections show the bird life of the state and present many other forms of animal existence. Through gifts, exchanges with other museums, and by purchase, the Museum has secured numerous specimens representing other lands and other ages of culture.

During the college year of 1936 the Museum has received valuable gifts and loans that have enhanced the usefulness of the collections very materially. The new Museum building provides a permanent fireproof home for its collections. People are realizing that their treasures will be
safe in the new quarters and that there they will be of benefit to students and many others.

The greatest problem at the present time is the lack of suitable cases in which to display the material on hand.

STEWARD OBSERVATORY

The principal instrument of the Steward Observatory is the reflecting telescope of 36 inches aperture, one of the largest telescopes on any university campus. Its three focus arrangements of 15, 45, and 110 feet and a Ross large-field coma corrector for the Newtonian focus allow unusual flexibility of operation and a great diversity of fields of research. The work of the instrument is almost entirely photographic and has produced over 3,500 photographs of the moon, planets, stars of variable brightness, star clusters, and galaxies (island universes). The chief results of these telescopic investigations have been: (1) the optical demonstration of the existence of a Martian atmosphere, (2) the discovery of supergalaxies (archipelagos of island universes), (3) investigations of the structure and probable development of the galaxies, and (4) distances and structure of several star clusters.

Observational equipment further includes, for patrol and photometric work, a 5-inch Cooke-type camera of 30 inches focus and an F:4.5 Tessar lens of 10 inches focus and a 4-inch Brashear refractor for solar and instructional purposes in a building of its own. A sensitive photoelectric photometer with an amplifier for use directly on the telescope has recently been completed in the University Shop. For the measurement and reduction of photographs there are a Hartmann microphotometer, a thermo-electric photometer for photographic plates, a screw comparator, and computing machines.

Besides numerous small pieces of apparatus, mainly for instruction and demonstration, are a fine Howard mean-time clock mounted in a temperature control room in the pier of the reflector, and a radio receiving set for time service. During the year 1926-27, the position of the Observatory was established with reference to United States Geological Survey data as follows:

Longitude W. 110° 56' 55.2"
Altitude above mean sea level 757 meters
Latitude N. 32° 13' 59.4"

In addition to observational work and instruction and in co-operation with the Carnegie Institution of Washington, there is in progress by means of a cyclograph and other auxiliary equipment especially devised here an extensive investigation of past climatic conditions in the Southwest as revealed by tree growth and as related to sunspot variation.

Throughout the academic year the observatory is open to the public after 8 o'clock on two Tuesday evenings each month, in clear weather, for observation of the moon, planets, and other objects of interest. The normal attendance is about seventy-five, but it is sometimes as high as three hundred. Approximately two thousand people are thus accommodated annually, many of them from schools in and near Tucson.
AFFILIATED INSTITUTIONS AND AGENCIES

ARIZONA STATE LABORATORY

Tucson
Robert A. Greene, Ph.D.,
Director
E. L. Breazeale, B.S.A.,
Assistant Bacteriologist
Margaret Self, Secretary

Phoenix
Marion E. Stroud, Bacteriologist
W. Edna Phillips, Secretary

The State Laboratory, which is located in the Old Main Building in Tucson with a branch in the Arizona State Building in Phoenix, was established in 1912 by an act of the legislature for the enforcement of the Pure Food Law and for the performance of any other duties requested by the Board of Regents of the University of Arizona, acting in joint session with the Superintendent of Public Health. The branch laboratory at Phoenix was established July 1, 1931.

The Superintendent of Public Health has requested the laboratory to make such examinations of a public health character as the various county and municipal health officers may request. This includes bacteriological and chemical examinations of foods, water, milk, material from suspected cases of infectious diseases, and poisoning.

The State Laboratory will upon request supply suitable containers to health officers for the shipment of samples. Sterile sample bottles and insulated shipping containers are available for water or milk samples which are intended for bacteriological examination.

The President of the University of Arizona has arranged to permit advanced students, who possess the necessary prerequisite training, to use the facilities of the laboratory at Tucson for research purposes. Such students are admitted only upon the recommendation of the head of the department concerned, and with the approval of the Director.

UNITED STATES BUREAU OF MINES

SOUTHWEST EXPERIMENT STATION

E. D. Gardner, Supervising Engineer
Leta Fricke, Clerk
Frances Hatch, Clerk

Metallurgical Section
Frank S. Wartman, Acting Supervising Engineer
P. M. Ambrose, Assistant Chemist
Alva H. Roberson, Junior Chemist

Mining Section
O. H. Metzger, Assistant Mining Engineer
P. T. Allsman, Assistant Mining Engineer
ORGANIZATION AND PURPOSE

The function of the United States Bureau of Mines of the Department of Commerce, as prescribed in its amended organic act, is to conduct scientific and technologic investigations in the field of mining and metallurgy, with a view to increasing safety and efficiency in the mineral industries. The bureau is essentially a field organization, with administrative and technical headquarters in Washington, D. C. At present there are eleven experiment stations located at: Salt Lake City, Utah; Rolla, Missouri; New Brunswick, New Jersey; Minneapolis, Minnesota; Seattle, Washington; Berkeley, California; Bartlesville, Oklahoma; Pittsburgh, Pennsylvania; Reno, Nevada; Birmingham-Tuscaloosa, Alabama; and Tucson, Arizona. Field offices are also maintained at various points.

In most cases the mining experiment stations are established at the state universities, and are doing direct co-operative work with the state institutions in the investigation of the metallurgical and mining problems that are most important to their respective districts. The special field of the metallurgical section of the station at Tucson is the metallurgy of copper; the staff of the division is actively engaged in the investigation of the principal problems confronting the copper industry of the Southwest, such as the treatment of oxidized and partly oxidized disseminated copper ores.

The mining section is conducting an investigation of mining methods and practices in metal mines in which stress is given to the relation of the methods used to rock structure and the factors affecting costs and choice of methods. Field engineers of the division aid prospectors and small operators by giving them advice on the solution of technical problems.

Laboratories and offices have been provided for this station in the south wing of the Mines and Engineering Building. The equipment is adapted to the investigation of concentration, leaching, roasting, and smelter problems on a scale ranging from hand samples to several tons.

FOREST SERVICE

SOUTHWESTERN FOREST AND RANGE EXPERIMENT STATION

Arthur T. Upson, Director
C. W. Griffin, Administrative Assistant

Forest Research

G. A. Pearson, in charge
B. R. Lexen, Hermann Krauch

Range Research

C. K. Cooperrider, in charge
H. O. Cassidy, Gordon D. Merrick, Edward C. Crafts
Santa Rita Experimental Range—Matt J. Culley, in charge
George E. Glendening
Jornada Experimental Range—Fred N. Ares, Superintendent
R. H. Canfield

Forest and Range Influences

C. K. Cooperrider, in charge
B. A. Hendricks, E. S. Bliss
The Southwestern Forest and Range Experiment Station occupies a suite of rooms on the third floor of the Agriculture Building on the University campus. This station is responsible for the research work connected with the conservation and utilization of timbers, forage, and water resources in the national forests of Arizona and New Mexico, embracing an area of some 30,000,000 acres of forest and range land. Its research results are also applicable in land-use planning on many areas in the Southwest outside the national forests. The organization includes three departments: Forest Research, Range Research, and Forest and Range Influences.

**FOREST RESEARCH**

Problems concerning the management of forests are studied under field conditions. Among the investigations in progress are: natural regeneration, including the influence of both natural and artificial factors such as soil, climate, plant competition, lumbering, grazing, fire and biotic agencies; studies of limiting factors in different forest associations; rate of growth of different species of trees under different conditions, methods of forest management and stand improvement; forest planting and nursery problems.

For thorough investigation of these problems and for study of different habitats and life zones at different altitudes ranging from the lower to the higher climatic limitations of tree growth, there have been established a number of field stations—namely, in the ponderosa pine type at Fort Valley near the foot of the San Francisco Mountains, with proposed supplemental work in the same type in Long Valley, also on the Colorado Plateau; in the Douglas fir type near Cloudcroft, New Mexico; and in the Engelmann spruce type on Mount Graham in southeastern Arizona. In addition a large number of permanent sample plots on which records of several thousand trees have been maintained for twenty years or more are located in different forest associations in Arizona and New Mexico.

**RANGE RESEARCH**

Research is conducted on a number of sheep and cattle ranges within the national forests, and on two experimental cattle ranges originally withdrawn as range reserves—namely, the Jornada, located near Las Cruces, New Mexico, and the Santa Rita, at the foot of the Santa Rita Mountains south of Tucson, Arizona.

The research units are engaged in determining the many factors that influence the productivity of forest and range lands, as well as the economic production of livestock on the range, and of isolating those factors so that the relative influence of each may be more fully understood by those directly or indirectly dependent upon the range industry, or engaged in the administration of range lands.

On the special experimental ranges general problems of range management are studied as well as those pertaining to the particular types of the semiarid range lands represented. These include production, maintenance, restoration, and proper degree and season of use of forage; improved stock salting and watering practices; calf crops and death losses; methods of natural and artificial revegetation; range forage ecology, etc.

Work on the national forests is primarily concerned with the solution of those particular problems that face the forest user and administrator. It must necessarily take into account the study and correlation with range management of other land uses and values. For example, present
primary range projects include a study of natural regeneration of cut-over pine forest and involve investigations to determine the relation of vegetation and its effect on surface runoff and stream flow.

**FOREST AND RANGE INFLUENCES**

Water and the natural products of the soil were a free bonanza to pioneer development of the Southwest. Today the perpetuation of existing and new developments that are dependent upon the delivery of usable water governs the future of existing and new populations, their standard of living, and economic structure. Likewise, the economic maintenance of transportation and highway systems is dependent upon flood control, and the productivity of range and forest lands is dependent upon soil stability.

Investigations in progress are field studies conducted at the Parker Creek Influences Station on the Salt River watershed above Roosevelt Lake. They are intended to determine whether vegetation may be employed as the primary means to safeguard waterflow and to control surface runoff, and, if so, whether in a natural state or one modified by cutting and grazing, and also to determine such facts as absorption of water by the soil, water requirements of different types and degrees of vegetation cover, and the relationship of the kind of cover to surface runoff and the delivery of maximum amounts of usable water for irrigation, municipal use, power, etc.

**AGRICULTURAL CONSERVATION PROGRAM**

State Agricultural Conservation Committee

Harry A. Stewart, Chairman
E. Ray Cowden
J. C. Jamieson
Alma Tate
Wayne T. Wright

Carl E. Teeter, Executive Secretary
Wesley Schlotzhauer, Junior Statistician

Secretaries of County Agricultural Conservation Associations

Apache County—Elmo Jarvis
Cochise County—Betty Craig
Coconino County—C. G. Lueker
Gila County—S. W. Armstrong
Graham County—George Tatum
Greenlee County—J. C. Burleson
Maricopa County—O. L. Davis
Mohave County—C. G. Lueker
Navajo County—Silas Decker
Pima County—C. B. Brown
Pinal County—Felton Hadnot
Santa Cruz County—Charles Thompson
Yavapai County—E. S. Turville
Yuma County—G. A. Pickering

The Agricultural Conservation Program is administered by the Agricultural Adjustment Administration in Arizona through the office of the Director of the Agricultural Extension Service. A state Agricultural Conservation Committee, composed entirely of farmers and livestock
growers, co-operates with the Agricultural Extension Service in carrying out the provisions of the federal legislation. Agricultural conservation associations are organized in each of Arizona's fourteen counties. County and community committees elected by agricultural producers deal directly with the farmers and stockmen in each county.

The Soil Conservation and Domestic Allotment Act approved February 29, 1936, amends the Agricultural Adjustment Act of May 12, 1933, to set up the present program. The policy and the purpose of the act includes (1) preservation and improvement of soil fertility; (2) promotion of the economic use and conservation of land; (3) diminution of exploitation and wasteful and unscientific use of national soil resources; (4) the protection of rivers and harbors against the results of soil erosion in aid of maintaining the navigability of waters and water courses and in aid of flood control; and (5) re-establishment at as rapid a rate as the Secretary of Agriculture determines to be practicable and in the general public interest of the ratio between the purchasing power of the net income per person on farms and that of the income per person not on farms that prevailed during the five-year period, August 1909 to July 1914, inclusive.

A total of 4,011 farmers and 338 range livestock growers participated in the program in 1936. Local administration is handled by officers elected by producers participating in the program, which producers constitute the membership of county agricultural conservation associations.
COMMISSIONS AWARDED
SECOND LIEUTENANT COMMISSION IN THE UNITED STATES
OFFICERS' RESERVE CORPS

The following graduates of the Reserve Officers' Training Corps, University of Arizona, received commissions as Second Lieutenants, Officers' Reserve Corps, U. S. Army:

Arnold, Walter E.
Barthels, Ted A.
Buck, Edward G.
Conroy, Thomas C.
Cox, Kenneth S.
Dalton, George H.
Dindinger, William R.
Donnell, John B.
Douthitt, Ted F.
*Drachman, Allen
Eberle, Glen C.
Fruitman, Frank W.
Hensen, Allen F.
Harrah, Ralph W.

*Hathaway, Gregory O.
Heuss, Edward C.
Jones, David M.
Leisenring, William P.
Lohse, Ashby I.
McCafferty, Guy F.
Marteny, William W.
Nelson, James H.
Quint, Roy T.
Ransom, John
Reager, Ralph D.
Simondi, Louis P.
Watkins, H. M. Sherman
Williams, Jack K.

DEGREES CONFERRED
MAY 27, 1936

COLLEGE OF MINES AND ENGINEERING

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

Glen Clarence Eberle
Robert Marion Holcomb, Jr., with highest distinction
Hollis Archibald Hunt

George Wesley Pracy, Jr., with distinction
John Francis Rauscher
Alfonso Wilson

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

James Edward Black
Ernest Adolf Gissel
†Winthrop Gilman Jones, with highest distinction

Robert Nation Kirby
Harland Richard Lane
Thornton Phillips

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

Raymond Leonard Baker
Howard Jacobson Clifford, with distinction
Benjamin Laird Cody
Wilbur Freeman
Harold Taylor Fuller

George Wilkie Paul
Henry Joseph Sieland
†Richard Franklin Thuma
Hubert Stauf vom Staufen
Russell Melvil Wheeler

* These candidates not being of age, received certificates of eligibility.
† Completed degree requirements, First Semester, 1935-36.
‡ Completed degree requirements, Summer Session, 1935.
BACHELOR OF SCIENCE IN MINING ENGINEERING

Charles Burt Cole
Robert Wood Cory, with distinction
John Ludwig Draeger
Frank Frutman
Jerome Arthur Gordon
Burrell Richard Hatcher, Jr.
Charles William Leininger

Paul Clark Macgregor
James Paul Michaelson
Charles Edward Morrison, Jr.
Malcolm Lindsay Roberts, with distinction
William Francis Sloan
John Henderson Soulé

PROFESSIONAL DEGREE

Electrical Engineer
James Aubrey Wilson

COLLEGE OF LAW

BACHELOR OF LAWS

†Bertram Jack Choisser
Francis Joseph Donofrio
Sheridan Downey, Jr.
Ruffo Espinosa
Paul Wesley Hertenstein
Abbie Yell Holesapple
Bryant Wade Jones
†David Markley Morgan
†Francis Podesta

William Henkel Quesnel
John Alfred Riggins, Jr.
Wilhelm Heinrich Roberz
Charles Walter Stokes
Fred Christian Struckmeyer, Jr.
Bryce Hewitt Wilson, Jr.
†James Ratcliffe Wyatt, with high distinction

JURIS DOCTOR

Henry Weber Beumler
Hal Valentine Hammons
Lowell Upton Hargus

David Pryce Jones
Victor Harrold Verity

COLLEGE OF EDUCATION

BACHELOR OF ARTS IN EDUCATION

†Karl Walter Ahlgren
Marion Ruth Bailey
Emmaline Carmein Balsz
Margaret Alice Barnett, with high distinction
Dolly Simms Beville
†Agnes Bilderbach
James Walter Black
Martha Brown
Mary Elizabeth Bryan
Grace Drew Bumpus
†Kathleen Marguerite Burgham
Laura Edith Clark
Owen Farrell Clark
Georgine Mary Clayberg
†Pearl Crossett
Maurine Claire Curry

Major

English
Education
Spanish
History
English
Education
History
Art
History
Commerce
Education
Education
English
Education
Education
Political Science
DEGREES CONFERRED

Georgia Frances Deatsch, with high distinction  French
Elvira Uribe Flores  Spanish
†Betty Eleanor Forney  History
†Harry Gerdes  Education
Richard Samuel Gilmore  Political Science
Lerlene Greenhaw  English
†Mary Gurley  English
†Elizabeth Mathews Hannah  English
†Doyle Wayne Harbison  Education
Jarvis Richard Henderson  English
Catherine Hughes  History
Margaret Hughes  English
Eda Louise Jackson  English
Mary Karam  Spanish
†Bertha Krentz  History
†Helen Elizabeth Leland  Spanish
Ruth Virginia Lombard  Art
†Felix Miguel Lucas  Education
Gertrude Havens Lynn  Education
Dorothy Hester McNeely, with high distinction  English
Fabian Dovoteo Mapalo  Education
Rose Moschetto  Spanish
Gladys Marie Mueller  Political Science
†Gerhard Herman Mundinger  Education
Eunice Palmer Otis, with distinction  French
Mary Hamilton Otis, with distinction  French
Dorothy Mae Pascoe  English
†Tempe Hopwood Pemberton  Spanish
Mary Elizabeth Perkins  English
Kathleen Perry  Education
Robert Petrie  Commerce
Emma Jean Purcell  English
Clotilde Quarelli  Spanish
Eva Corinne Rentfrow  History
Marjorie Clara Robinson, with high distinction  English
Dorothy Adelaide Rosenfeld  History
†Alice Walker Ryan  Spanish
Blanche Virginia Schale  Spanish
Marion Lovica Scheppke  Commerce
Isabel M. Schmiedendorf, with high distinction  Spanish
†Margaret Linwood Schwab  English
Ralph Schwartz  History
†Wylimene Seidel  Education
†Elizabeth Reeves Smith  English
Lulu Smith  History
Vivian Hallin Starck  Education
Kathryn La Rue Stevenson  Spanish
Catharine Virginia Stewart  Commerce
Ethel Louise Stewart, with distinction  Spanish
Lillie Stewart  Education
Louise Mae Stoll  English
Frances Marie Turrentine  English
Beula Mary Wadsworth  Education
Jenny Lynne Wellington  French
†Rhea Wenger  Education
Alice Marian White  Spanish
Jewel Charlotte Wilbanks  English
†Helen May Williams  Education
Helen Wilson Wright  English
UNIVERSITY OF ARIZONA RECORD

Nellie Mae Wusich
†Paul Herman Zeugner

BACHELOR OF SCIENCE IN EDUCATION

Gladys Bowden
Howard Francis Cate
Mary Estelle Collins
Mabel Gertrude Gill
Albert Walter Hetherington, Jr., with distinction
John James Kelly
Alice Louise Mathis
Gilbert Mills
Edwin Jones Montgomery
Esther Cassin Parris
Nelson Albert Payne
Welmon Oscar Renner
‡Brehman Robinson
‡Andrew Outzen Smith
Virginia Smith
Halvar Starck
Anne Parker Tenney
†Harold Emerson Turley
Frances Edith Wamsley
Mary Sue Wentworth, with distinction
Martha Yount

COLLEGE OF FINE ARTS

BACHELOR OF FINE ARTS

‡Frances Lynn Barron
Tillie Farber
Louise Elizabeth McCulloch

BACHELOR OF ARTS IN SPEECH

Valentine Albert Becker
William Arthur Ellis

BACHELOR OF MUSIC

Katherine Lois Huffman
Herman Novick, with distinction
Lottie Frances Parks, with high distinction
†Inez Frances Rice
Emilia Spezia

Public School Music
Public School Music
Piano
Public School Music
Public School Music

COLLEGE OF LIBERAL ARTS

BACHELOR OF ARTS

Ruth Eunice Abbott, with distinction
John Aboud

Economics
Spanish
DEGREES CONFERRED

Gilbert Apocada
Walter Frederic Armbruster
Jo Anne Barnes
Danna Good Belton, with distinction
Alice Mae Best
Anne Tatnall Bettle
†James Patrick Boyle, Jr.
Lillian Ruth Brill
Catharine Jane Cratty
Gene Francis Curley
†Bessie Du Bois
Helen Elizabeth Fish
Kenneth Allen Fisher
Nelson Forrest
Eleanor Gill
Kathryn Riggs Gilman
†Claude William Guice
Lucy Prescott Hale
Frances Virginia Halladay, with distinction
Winifred Grace Hanna
Marian Lois Hartig
Gregory Hathaway
†Mary Jane Hayden
Billie Ilonne Henning
Florence Ada Hockett
Barbara Horton
Geraldine Hosmer
David Donald Hoyt
William Hudspeth
David John Jones, Jr.
Dorothea Schatz Kelly, with highest distinction
John Franklin Kelly
William Henderson Kelly, with distinction
Rosalie Kendall, with distinction
Elhora Little
Katherine Little
Ashby Ira Lohse
†Charles Elizabeth Lowell
†Lewis Clark McVay
Ruth Durborrow Mills
Ethel Peggy Misenheimer
Barbara Moore, with high distinction
Disraeli Morrison, with distinction
Mary Aileen Murray, with high distinction
†Henry Flanagan Newkirk
William Henry Patterson
Patsy Perkins
Alfred Peterson
Ethel Billie Powell, with distinction
Margaret Aileen Murray, with distinction
†Milnor Albert Richmond
Carl Homer Riesen, with high distinction
Geraldine Ruf
Grace Elizabeth Ryan
Greta June Sarrels
†Richard Sasuly
†Benjamin Luther Slack, Jr.
†Eugene Archer Stratton

Spanish
Archaeology
History
Psychology
English
Psychology
Spanish
Sociology
French
English
English
Sociology
Psychology
Psychology
Sociology
Psychology
History
Psychology
History
Psychology
Sociology
Archaeology
English
Psychology
Spanish
French
Psychology
Sociology
Archaeology
French
French
Zoology
Archaeology
Archaeology
Economics
Archaeology
English
History
English
Economics
Archaeology
Economics
Science
Archaeology
Zoology
Zoology
Archaeology
Sociology
Zoology
Archaeology
History
English
Psychology
BACHELOR OF SCIENCE

- Frank Eugene Andrews
- Ruth Mabel Cuming, with distinction
- Edmundo Fernandez Felix
- Gretchen Ruth Floyd
- Edward Pace Fraps
- Edward David Freis
- Sarah Margaret Gandy
- Delbert John George, with distinction
- Warren Fredric Gorman
- Kenneth Edgar Grimm
- Anthony Vincent Grossetta
- Robert Murray Hill

†Frank Caleb Kelton, Jr., with high distinction
- Floralou Kettenbach
- Richard Walter Lewis
- William Wesley Marteny, with distinction
- Harold Hugh Mitchell
- Wesley Keplinger Orendorff, with distinction
- Marian Maude Sarrels
- Edgar Charles Walker
- Katherine Watkins, with high distinction

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

- Jack Orland Bentz
- †Arthur Lewis Brinkman
- Robert Steele Broussard
- John McCullough Burton
- †Edmund Lawrence Craig, Jr.
- Lawrence William Cross, Jr.
- George Henry Dalton
- Francis Daugherty
- Helen Winifred Dunipace
- †Charles Knox Felder
- Clem Campbell Glass, with distinction
- Charles Buchanan Hickcox, Jr.
- Lucy Gertrude Hobart, with distinction

- David Carroll Hobson
- Cecil Cephas Knudson
- George Miller Longwell
- Parnell Mahoney
- Robert Linn Morgan, with distinction
- James Frederick Morris
- Frank Peter Nelson
- Edward John O'Mara
- Roland Trailer Parker
- Ben Posner, with distinction
- Oliver Clinton Stallings, with high distinction
- Albert Lehman Troelstrup
- Charles Newton Walters

BACHELOR OF SCIENCE IN PUBLIC ADMINISTRATION

- Mildred Bernice Foster
- †Mayola Rogers
DEGREES CONFERRED

COLLEGE OF AGRICULTURE

BACHELOR OF SCIENCE IN AGRICULTURE

William Addis Beale, with high distinction
†Edward Lee Breazeale
†Thomas Edward Colford
†Richard Stevens Davies
James William Ewing
Rawson Blaine Harmon, Jr.
†Morley Melvin Hattis, with distinction
†Maurice Perkins
†Walter Scott Schlotzhauer
Coralinn Elizabeth Tuttle

Major
Horticulture
Agricultural Chemistry
Botany
Agricultural Chemistry
Dairy Husbandry
Animal Husbandry
Horticulture
Horticulture
Agricultural Chemistry
Botany

BACHELOR OF SCIENCE IN HOME ECONOMICS

Miriam Brooke
†Josephine Luz, with distinction
Frances Newberry McClure
Minnie-Agnes McMichael
Mary Louise Rogers
Winifred Ross, with distinction
Katherine Ann Wofford

Major
Nutrition
Nutrition
Nutrition
Nutrition
Nutrition
Nutrition
Nutrition

BACHELOR OF SCIENCE IN VOCATIONAL HOME ECONOMICS

Verna May Crabb
Elma Mae Davis
Helen Evans
Emily Charlotte Ewing
Catherine Isabelle Griffith

Jeannette Spencer Malott, with distinction
Lucille Vera Purcell
Evelyn Monica Williams

ADVANCED DEGREES

MASTER OF ARTS

Name
Richard Lewis Aldrich
†Alice Bower Aly
Ruth Miller Arntzen
Rollah Estil Aston
Stanley Harding Boggs
Raymond Elbert Booth
John Maurice Bryson

Thesis Title
A Survey of Prehistoric Architecture in the Southwest
Government Control and Censorship of the Drama
Influence of Prehistoric Religious Ceremonies upon the Living Indian Tribes of the Southwest
Boulder Dam and the Public Utilities
A Survey of the Papago People
School Finance in Navajo County
Provence and Languedoc as Reflected in the Modern French Novel

Major
Archaeology
English
Archaeology
History
Archaeology
Education
French
Ruth Ellen Clark
Elizabethan Animal Lore and Its Sources, Illustrated from the Works of Spenser, Lyly and Shakespeare
English

‡Oliver L. Corbin
The Status of Pupil Participation in Government in the Small High Schools of Arizona
Education

George Neiman Davis
Reciprocal Trade Agreements Act of 1934
Economics

†William B. Deeter
The Effect of Weather on Sustained Attention of High School Students
Education

Orville Wade Dishaw
Some Criteria in the Field of Occupational Guidance
Education

William Arnaman Duffen
The Development of Human Culture in the San Pedro River Valley, Arizona
Archaeology

Gladys Cline Finney
A Comparative Study of the Relative Achievement of English and Spanish Transient and Non-Transient Sixth Grade Groups
Education

Willa Hussey Freis
Herrick's Debt to Jonson
English

Alice Seabury Graybeal
A Study of Perception in Non-Readers in the Tucson Schools
Psychology

Juliette Halpert
Ambition in Marlowe's Characters—A Reflection of the Elizabethan Spirit
English

‡Gloria Howatt
La linterna mágica: A Picture of Mexican Life
Spanish

Lillian Spinner Johnston
A Remedial Program in Reading in the Rural Schools of Yuma County
Education

Irvan Elmer Kohlhoff
The Critical Evaluation of High School Newspapers in Arizona
Education

Mary Elizabeth McClain
The Epithalamions of Spenser and of Jonson: A Comparative Study
English

Gordon Alexander McLean
Activities of the Public Utilities in Connection with Educational Institutions During the years 1919-1928
Political Science

Martha Jean McWhirt
Incised Decoration in the Prehistoric Pottery of the Southwest
Archaeology

Esther Newberg Mahoney
Development and Classification of Chihuahua Pottery
Archaeology

Clinton McMaham Mangun
A Rating Scale for Elementary Schools
Education

Moselle Leota Messecar
The Reading Interests of High School Pupils in New Mexico
Education
# DEGREES CONFERRED

Florence Jackson Meyer  
*The Vogue of Carlyle in England and America*  

Mayre Arnette Midgard  
*The Effects of the Angular Deviations of a Line on Postural Sway*  

John Oscar Mullen  
*A Proposed Educational Organization for Yavapai County, Arizona*  

Lucy McNeley Quinn  
*The Railroad as a Factor in Arizona History*  

Margaret Mary Ryan  
*Recent Literature Dealing with Social-Business Education and Consumer Education*  

Frank L. Shahan  
*The Problem of Educating the Mexican Child*  

Robert Warren Taylor  
*A Program of Educational Development for Florence Union High School District, Pinal County, Arizona*  

Francis Richard Vihel  
*A Financial Survey of Maricopa County*  

Gordon Willey  
*A Survey of Methods and Problems in Archaeological Excavation, with Special Reference to the Southwest*  

## MASTER OF SCIENCE

<table>
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<tr>
<th>Name</th>
<th>Thesis Title</th>
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<td>Joseph Frederick Arnold</td>
<td>Plot Studies on the Effects of Nitrates on a Southwestern Range</td>
<td>Botany</td>
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<td>Lee Rudolph Blessing</td>
<td>Experimental Work on Manganese-Silver Ores</td>
<td>Metallurgy</td>
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<td>Emily Southorn Caldwell</td>
<td>The Comparative Effects of Fluorine and Parathormone on the Calcium and Phosphorus Metabolism of Normal and Parathyroidectomized Rats</td>
<td>Nutrition</td>
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<td>Conwell Brooks Carter</td>
<td>A Study of the Genus Euphorbia in Arizona</td>
<td>Botany</td>
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<td>Eleanor Merrill Emery</td>
<td>Flowers of Liliaceae and Related Families Grown in Southern Arizona Gardens</td>
<td>Botany</td>
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<tr>
<td>Thomas Ellwood Gillingham, Jr.</td>
<td>The Geology of the California Mine Area, Pima County, Arizona</td>
<td>Geology</td>
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<td>Charles Worth Hodgson</td>
<td>Seasonal Changes in the Chemical Composition of Some Important Arizona Range Forage Plants</td>
<td>Animal Husbandry</td>
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<td>Robert Gabriel Picard</td>
<td>X-Ray Scattering Effects in Powdered Crystal Analysis</td>
<td>Physics</td>
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</table>
Nicholas Ponomareff

Plant Pathology

Studies on the Resistance of Arizona Ash (Fraxinus tommeyi) to the Root Rot Fungus (Phymatotrichum omnivorum)

George Michael Potter

Metallurgy

Experimental Work Involving the Substitution of Manganese for Iron in Copper Mattes

Howard Edwin Raber

Mathematics

The History of Zeno's Arguments on Motion

Herbert Dawson Rhodes

Chemistry

The Thermal Decomposition of Dimethyl Sulfite

Dorothy Llewellyn Richards

Chemistry

The Pectic Materials of Mesquite Sapwood

Morris Runke

Metallurgy

A Method of Studying Silver Losses in Concentrator Tailings

Dwight Leonard Ryerson

Zoology

A Comparative Study of the Blood of Certain Reptiles

Merle Darwin Schmid

Metallurgy

Experimental Work Involving the Substitution of Manganese for Iron in Copper Mattes

Leon William Seigle

Chemistry

Starch and Pectic Substances from Lemon Wood

George Skora

Botany

A Study of the Species of Astragalus Occurring in Arizona

Edwin Owen Wicks

Bacteriology

Some Sources of Slow Lactose Fermenters of the Colono-Aerogenes Group in a Semi -Arid Environment

John Andrew Williams

Agricultural Chemistry

Hydrolytic Reactions Affecting the Hydrogen-Ion Concentration of Alkaline-Calcareous Soils

MASTER OF MUSIC

Maurice Franklin Anderson

Band and Orchestral Instruments

Symphonic Poem, "Poem of the Southwest"

John Strong Glasier

Composition

Cowboy Suite

Camil Van Hulse

Composition

Parnassian Overture

Andrew Broadus White

Voice

Baritone Song Recital

DOCTOR OF PHILOSOPHY

Petrus Cornelius Jacobus Oberholzer

Agricultural Chemistry

The Decomposition of Organic Matter in Relation to Soil Fertility in Arid and Semi-Arid Regions

HONORARY DEGREES

Ramón Menéndez Pidal

Doctor of Letters

Franklin Jacob Crider

Doctor of Science
HONORS AND PRIZES
1935-1936

THE PRESIDENT'S CUP AND SCHOLARSHIP
1934-35:
Cup—Morenci High School
Scholarship—Ruth Serna
1935-36:
Cup—Superior High School
Scholarship—Not yet awarded

THE UNIVERSITY CUP AND SCHOLARSHIP
1934-35:
Cup—Tucson High School
Alando Jones Ballantyne
Helen Webb
Norris Edmiston
Scholarship—Joe Deatsch
1935-36:
Cup—Tucson High School
James Buchanan Henry
Nan Correll
Gladys Lucille Goodding
Scholarship—Not yet awarded

COLLEGIATE SCHOLARSHIPS AND PRIZES
1935-1936

For General Scholarship and Attainment

The A.A.U.W. Scholarship
Hester McNeely
The Associated Women Students Award
Janice Campbell
The Philo Sherman Bennett Scholarship
Nancy Hareelson
The Class Scholarship Awards
James Buchanan Henry
Freshman
John K. Draper
Sophomore
Margaret Dora Heise
Junior
Gertrude Frances Hill
Senior
Hester McNeely

The Merrill P. Freeman Medals
Robert M. Holcolmber, Jr.
Rosalie Kendall
Parnell Mahoney

The Dwight B. Heard Scholarships

The Interfraternity Scholarship Cup
Beta Kappa
The Inter-Hall Scholarship Cup
First Semester
Cochise Hall
Second Semester
Pima Hall
The Mortar Board Cups
Freshman
Rose Marie Sanguinetti
Sophomore
Peggy Schley
The Phi Kappa Phi Freshman Awards
James Buchanan Henry, Nan Correll, Ira B. Richards, Bobbie West Condron, Gladys L. Goodding, William E. Bishop, Donna Cosulich, Hazel Ahlgren, Elizabeth O. Thompson, Anne Pressley.

The Phi Kappa Phi Plaque
Frank Caleb Kelton, Jr.

The Hattie Ferrin Solomon Award
First Semester
Kappa Kappa Gamma
Pi Beta Phi

Second Semester
Margaret Dora Helse
Gertude Frances Hill
Frances V. Halladay

The Ella A. Stearns Award
Honorable Mention
William Hudspeth
Eleanor Robert

The Tucson Woman's Club Scholarship

For Departmental Achievement

Agriculture
The Alpha Zeta Scroll
William Addis Beale

Chemistry
The Phi Lambda Upsilon Cup
Tom Hardy

Civil Engineering
Certificate
Robert Holcomb, Jr.

Commerce
The Alpha Kappa Psi Cup
Anna Jane Hill

Dramatic Art
The Tucson Players' Awards
Jeanne Metcalf
Kenneth Hayden

Education
The Pi Lambda Theta Award
Maria Urias

Engineering
The Tau Beta Pi Cup
Harry James Garrett

English
The Phoebe M. Bogan Memorial Poetry Prize
The Jennie G. Fowler Memorial Poetry Prize
Gladys E. Hayden
Marcia Mays

Home Economics
Home Economics Club Cup
Jeannette Malott

Law
The Phi Alpha Delta Award
James Rogers

The Phi Delta Phi Award
James R. Wyatt

The Senior Prizes in Law of Trusts
First Prize
James R. Wyatt
Lowell Hargus
Second Prize
Jack Choisser
Honorable Mention

Mathematics
The Delta Pi Sigma Cup
John K. Draper
DEGREES CONFERRED

Military
The P.M.S. & T. Saber Award  Cadet Colonel William W. Marteny
The Honor Military Graduate  Cadet Colonel William W. Marteny
Pima Chapter, Reserve Officers Association Medal
Honor Junior  Cadet Second Lieutenant Clarke L. Hall
The Scabbard and Blade Medals
Honor Sophomore  Cadet Regimental Sergeant Major Morris S. Bolzer
Honor Freshman  Cadet Private James B. Henry

Physical Education for Women
The Gittings Honor Cup  Mabel Gill

Spanish
The Sigma Delta Pi Medals
First-Year Spanish  David Ferber
Second-Year Spanish  Clement Chase
Third-Year Spanish Composition  Gertrude Hill
Third-Year Spanish Literature  John L. Hubbel

Speech
The Byron Cummings Cups
Junior College Cups
Arcus Reddoch, Lynn Ammerman, Max McMillin, William
Griswold, Elizabeth Leddy, Margaret Mary Martinez
Varsity Debate Cups
Parnell Mahoney, Disraeli Morrison, Wayne Webb, Noel R.
Gray, Paul F. Campisi, Richard O. Hale, Clarence J. Dun-
can, Howard Gibbons, William H. Holloway.
The Delphian Award (Women's Cup)
Delta Sigma Rho Award  Wayne J. Webb

COLLEGIATE HONORS
1935-1936

Class Honors

Senior Scholars
Ruth Eunice Abbott  Gilbert Mills
Jo Anne Barnes  Harold Hugh Mitchell
William Addis Beale  Barbara Moore
Dana Good Belton  Disraeli Morrison
Anne Tatnell Bettle  Mary Aileen Murray
James Edward Black  Louise Elizabeth McCulloch
Grace Drew Bumpus  Dorothy Hester McNeely
Howard Jacobson Clifford  Eunice Palmer Otis
Mary Estelle Collins  Mary Hamilton Otis
Robert Wood Cory  Lottie Frances Parks
Ruth Mabel Cuming  Esther Cassin Parris
Helen Evans  Ben Posner
Delbert John George  Ethel Billie Powell
Clem Campbell Glass  George Wesley Pracy, Jr.
Warren Frederic Gorman  Carl Homer Riesen
Frances Virginia Halladay  Malcolm Lindsey Roberts
Lucy Gertrude Hobart  Winifred Ross
Robert Marlon Holcomb, Jr.  Isabel Morgan Schmiedendorf
Katherine Huffman  Virginia Smith
William Henderson Kelly  John Henderson Soule
Rosalie Kendall
Ashby Ira Lohse
Parnell Mahoney
William Wesley Marteny
James Paul Michaelson

Oliver Clifford Stalings
Ethel Louise Stewart
Katherine Watkins
Evelyn Monica Williams

Junior Scholars

Frances Arnold Anderson
Robert Ayers
Louis J. Bazzetta
Andrew W. Buchhauser
Harold James Byrne
Lawrence O. Campbell
Joe T. Castelan
Leslie Collie
Catherine Dalbey
Elizabeth Dearing
Catherine Souers Duncan
Sue Don
Wilma Stout Fisher
Margaret Jane Gilmore
Ben Roger Gossick
Noel Robert Gray
Don W. Gustin
Nancy Harelson
John Franklin Hechtman
Margaret Dora Heise
Ted Hendrixson
Anna Jane Hill
Gertrude Frances Hill
Martha Huxtable
John Wilson Trischka
Maria del Socorro Urias
James Byron Van Horn

Jess A. Joseph
Robert B. Kaster
Muriel Kerby
Kalbert Lines
Margaret Jane Loomis
Paul S. Mekkelson
Jeanne Metcalf
Theodore Louis Moeller
Erwin Moscovitz
Dan A. H. Olsen
Robert Quinn Parks
John Frederick Prince
David Daniel Rabb
John Coleman Redd
Harry F. Rickel
James H. Roberts
Rachel Elizabeth Smith
Margaret Henderson Soule
Marvin Spitz
William T. Stewart
John LeRoy Stone
Mary Elizabeth Strickler
Myra Nell St. Clair
Lloyd Allen Tatum
Clinton H. Wasser
Thelma Louise Wilson

Sophomore Scholars

Alando Jones Ballantyne
Clarence Walter Bittner
De Soto Henry Bock
William Edwin Burns
Janice Campbell
Raymond Jack Cartwright
Florence Costey
Elliott Morse Cushing
John K. Draper
E. Norris Edmiston
Constance E. Everett
Alan Northcote Fite
Saul Friedlander
Myrtle Helen Gold
Manny Gottlieb
Kenneth Hayden
Philip H. Hoffman
Jean Holderness
Neal D. Houghton, Jr.
Mary Jane Huseman

Ulysses S. Kay
Nina Kornegay
Evelyn J. La Vine
James R. Malott
Blanch Mekkelson
Harry L. McMillan
Margaret Pearson
Jean Pettis
John D. Rittenhouse
Harris Rosenthal
Max W. Rothpletz
Frederick Holland Scantling
William George Schoch, Jr.
Betty June Simpson
Sarah Elizabeth Spittle
Carolyn Strickler
Patience Tribolet
John F. Vozza
James Whitley, Jr.
DEGREES CONFERRED

Freshman Scholars

Hazel Ahlgren
Robert Wallace Aldrich
Le Roy Aldredge
Jean Knowlton Andrus
John R. Bemis
William Edward Bishop
Frances Lewis Brown
Clement Kelsey Chase
Hollis B. Chenery
Bobbie West Condron
Nan Correll
Donna Bernice Cosulich
Lawrence Theodore Eck
Calvin W. Evans
Janet Flanigan
Althea Gardner
Harry James Garrett
Gladys Lucile Goodding
Leon Wilbur Gray
Lovell Gunter
James Buchanan Henry

John L. Hubbel
Crosby Moyer Kelly
F. Raymond King
Amy Lee
Frank August Mangelsdorf
Moreau S. Maxwell
Angus Earl McVicar
Cynthia Jane Olmstead
Elizabeth Perkins
Anne Pressley
Ira B. Richards
Emil Rovey
Melba Sawyers
Mary H. Seaman
Elizabeth O. Thompson
Robert Hal Tobias
Helen Tophoy
Franklin Veatch
Emily Beatrice Weir
Joan Elizabeth White
Dorothy L. Wonner

Third-Year Honors—College of Law

Hal Valentine Hammons
Bryant Wade Jones
David Pryce Jones

Second-Year Honors—College of Law

Karl Rodman

GENERAL UNIVERSITY HONORS

Phi Kappa Phi Initiates

Graduate Students

Maurice Anderson
Rollah Estil Aston
Lee R. Blessing
George N. Davis
Charles Worth Hodgson

Petrus C. J. Oberholzer
Dwight Leonard Ryerson
Leon W. Seigle
Patty Newton Skaggs
Camil Van Hulse

Seniors

Mary Alice Barnett
Robert Marlon Holcomb, Jr.
Dorothea S. Kelly
Frank Caleb Kelton, Jr.
James Ratcliffe Wyatt
Ruth Eunice Abbott
William Addis Beale
Morley Melvin Hattis
Albert Walter Hetherington, Jr.
Winthrop Gilman Jones
Alice Louise Mathis

Dorothy Hester McNeely
Barbara Moore
Mary Aileen Murray
Lottie Frances Parks
Ethel Billie Powell
Carl H. Riesen
Majorie Clara Robinson
Winifred Ross
Isabel Morgan Schmiedendorf
Oliver Clinton Stallings
Katherine S. Watkins
Sigma Xi Initiates to Full Membership
Leon William Seigle

Sigma Xi Initiates to Associate Membership
Lee R. Blessing
Thomas E. Gillingham, Jr.
Charles Worth Hodgson
Eleanor Merrill Emery
Petrus C. J. Oberholzer
Nels Paul Peterson
Robert G. Picard
Herbert Dawson Rhodes
Dorothy Llewellyn Richards
Sidney Morris Runke
Dwight Leonard Ryerson
George W. Skora
John A. Williams

Phi Beta Kappa Initiates
Dorothea S. Kelly
Frank C. Kelton, Jr.
Barbara Moore
Mary A. Murray
Ethel B. Powell
Carl H. Riesen
Katherine S. Watkins
### SUMMARY OF REGISTRATION  
**1936-1937**

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<tr>
<th></th>
<th>Men</th>
<th>Women</th>
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<td>Graduates</td>
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<td>93</td>
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<td>Seniors</td>
<td>238</td>
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<td>Sophomores</td>
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<td>Freshmen</td>
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<td>Regular Unclassified</td>
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<td>Law Students</td>
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<tr>
<td>Total Regular Students</td>
<td>1,706</td>
<td>997</td>
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<td>Special Students</td>
<td>19</td>
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<td>Total Regular Session Students</td>
<td>1,724</td>
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<td>Summer Session</td>
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<td>University Extension:</td>
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<tr>
<td>Extension Class Students</td>
<td>45</td>
<td>114</td>
<td>159</td>
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<td>Correspondence Students (April 1, 1936-April 1, 1937)</td>
<td>236</td>
<td>305</td>
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<td>GRAND TOTAL</td>
<td>2,295</td>
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* Not including sixty-four auditors.
### SUMMARY OF REGISTRATION AT THE UNIVERSITY OF ARIZONA, 1936-1937

<table>
<thead>
<tr>
<th>Degrees</th>
<th>Graduates</th>
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<td>School of Home Economics</td>
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Total enrollments: 1936-1937
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**College of Mines and Engineering**

- B.S. in C.E.: 13 _ 13
- B.S. in M.E.: 20 _ 20
- B.S. in P.A.: 18 _ 18
- B.S. in E.E.: 67

- B.S. in Min.E.: 12 _ 12
- Total: 67

**College of Law**

- Third Year: 106 56 202
- Second Year: 321 182 503
- First Year: 485 263 748
- Law Special: 57 45 102
- Total: 1,293 1,128 2,421

- Not including Law: 1,724 1,019 2,743
- Correspondence Students (April 1, 1937): 236 305 541

- Grand Total: 3,293 3,175 4,468

- Not including sixty-four auditors.
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