1946

General Catalogue 1946

Utah State University

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## 1946

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COLLEGE CALENDAR FOR THE SCHOOL YEAR 1946-1947

FALL QUARTER

September 23, Monday ...... First Faculty Meeting.
September 26, Thursday ...... Aptitude and Other Tests for All New Students.
September 27, Friday ...... Registration of Former Students.
September 28, Saturday ...... Registration of All New Students.
September 30, Monday ...... Instruction begins.
October 18, Friday ...... Last day for adding classes.
October 28, Monday ...... Prospective graduates submit applications for candidacy.
November 15, Friday ...... Last day for withdrawal from classes.
November 28-29, Thurs., Fri. ...... Thanksgiving Recess.
December 20, Friday ...... Fall Quarter ends.

WINTER QUARTER

January 3-4, Friday, Saturday ...... Registration. Candidates submit applications for graduation.
January 6, Monday ...... Instruction begins.
January 24, Friday ...... Last day for adding classes.
February 19, Wednesday ...... Last day for withdrawal from classes.
March 8, Saturday ...... Founders' Day.
March 19, Wednesday ...... Winter Quarter ends.
March 20-23 inclusive ...... Spring Recess.

SPRING QUARTER

March 24-25, Monday, Tuesday ...... Registration.
March 26, Wednesday ...... Instruction begins.
April 18, Friday ...... Last day for adding classes.
May 14, Wednesday ...... Last day for withdrawal from classes.
May 30, Friday ...... Memorial Day.
June 1, Sunday ...... Baccalaureate Service.
June 6, Friday ...... Spring Quarter ends.
June 7, Saturday ...... Commencement.

SUMMER QUARTER 1947

June 11, Wednesday ...... First Session begins.
July 19, Saturday ...... First Session ends.
July 28, Monday ...... Second Session begins.
August 30, Friday ...... Second Session ends.
ADMINISTRATION
Board of Trustees

C. G. Adney ................................................. Corinne
Hyrum M. Blackhurst ...................................... Salt Lake City
James S. Prestwich ....................................... Cedar City
Charles Redd .............................................. La Sal
E. H. Street ............................................... Richfield
Ray E. Dillman ............................................. Roosevelt
Henry Peterson ............................................ Logan
Thorpe B. Isaacson ......................................... Salt Lake City
W. W. Merrill .............................................. Logan
L. C. Montgomery .......................................... Heber City
Merrill N. Warnick ........................................ Pleasant Grove
A. W. Chambers ............................................ Smithfield
E. E. Monson, Secretary of State (ex officio) ........ Salt Lake City
D. A. Skeen, President, Alumni (ex officio) ........ Ogden
Russell E. Berntson, Secretary-Treasurer ................ Logan

Officers of Administration
Franklin S. Harris ......................................... President
W. W. Owens ................................................ Director, Extension Service
R. H. Walker ................................................ Director, Agricultural Experiment Station and Dean, School of Agriculture
H. Wayne Driggs ............................................ Director, Branch Agricultural College

W. L. Wanlass ................................................ Dean, School of Commerce
Ernest A. Jacobsen .......................................... Dean, School of Education
Lewis M. Turner ............................................ Dean, School of Forest, Range and Wildlife Management
B. L. Richards .............................................. Dean, Graduate School
Carlton Culmsee ............................................ Dean, School of Arts and Sciences
Ethelyn O. Greaves .......................................... Dean, School of Home Economics
Jerald E. Christiansen ..................................... Dean, School of Engineering, Industries and Trades
Milton R. Merrill ............................................ Dean, Summer Session
Daryl Chase .................................................. Dean of Students
Ione S. Bennion ............................................. Dean of Women
Russell E. Berntson .......................................... Executive Secretary and Treasurer
Sylvan Erickson ............................................ Assistant Secretary and Treasurer
Eric A. Johnson ............................................ Purchasing Agent and Manager of Bookstore
*William H. Bell ............................................ Registrar
David W. Davies ............................................ Librarian
E. W. Timberlake, Colonel ................................ Commandant, R.O.T.C.
C. Lester Pocock .......................................... Chairman, Public Relations
Vera Carlson ................................................ Secretary to the President

The Deans' council consists of the President, all Deans, the Registrar, the Executive Secretary and Treasurer, and the Directors of the Agricultural Experiment Station and the Extension Service.

*On leave.
Faculty Committees

The President of the College is ex officio a member of each standing committee.

Assemblies—The President, Dean of Students, Professors Fogelberg, Christiansen, Myers.

Athletic Council—Professors Hendricks, Alder, Caine, H. B. Hunsaker, Payne, Mr. Berntson, Romney.

Attendance and Scholarship—Professors V. H. Tingey, A. J. Morris, Ricks, Clara West.

Awards and Honors—Professors Ricks, Geddes, Milligan, Skeels, W. P. Thomas, Blanch, Kelker.

Credits and Admissions—Professors H. B. Peterson, Boyle, Hayward, Wilcox, Neuberger, Jones.

Debating—Professors Vickers, Jonas, Murray, Hayward.

Graduation—Professors Symons, Jeppsen, R. Richards, Bertha Johnson, Thorne, Kelker.

High School Relations—Professors Jacobsen, Phillips, Wrigley, Mr. Pocock.

Housing—Mr. Pocock, Dean of Women.

Library—Academic Deans, Director Owens, Librarian.

Loan Fund—Mr. Berntson.

Lyceum—Professors Fogelberg, Christiansen, Mr. Berntson.

Personnel and Guidance—Dean of Students, Dean of Women, Dean Jacobsen, Professor Frandsen.

Pre-Medical and Pre-Dental Work—Professors Hammond, Culmsee.


Registration—The Academic Deans, Professors Hayward, Jeppsen, H. B. Hunsaker.

Schedule—Professor Kepner.

Social Affairs Committee—Dean of Students, Dean of Women, Professors H. B. Hunsaker, V. D. Gardner, M. L. Nielsen, Holmgren, Yocom, Miss Carlson, Miss Richards.

Student Body Organization—Dean of Students, Dean of Women, Professors V. D. Gardner, Hendricks.

Teacher Placement—Professors Jacobsen, Humpherys, Carlisle, Phillips.

Emeritus Faculty

Peterson, Elmer George, B.S., A.M., Ph.D., LL.D. President Emeritus

(Listed in order of seniority of appointment.)

Peterson, William, B.S. Director Emeritus, Extension Service

Pedersen, N. Alvin, A.B., Ph.D. Dean Emeritus, School of Arts and Sciences

Greaves, Joseph E., B.S., M.S., Ph.D. Professor Emeritus of Bacteriology and Biochemistry

Arnold, Frank Russell, A.B., M.A. Professor Emeritus of Modern Languages

Frederick, Hyrum John, D.V.M. Professor Emeritus of Veterinary Science

Newey, Aaron, B.S. Professor Emeritus of Metal Work

Kylle, Charlotte, A.B., A.M. Assistant Professor Emeritus of English

Jensen, George C., A.B., M.A. Professor Emeritus of Modern Languages

Daines, Franklin D., A.B., M.A., Ph.D. Professor Emeritus of Political Science

Peterson, Parley E., A.B., C.P.A. Professor Emeritus of Accounting

Swenson, D. A., B.S. Associate Professor Emeritus of Woodwork and Building Construction

Moen, Johanna, B.S. Professor Emeritus of Textiles and Clothing

Dancy, Charlotte E., R.N. Assistant Professor Emeritus of Physiology

Peterson, Henry, A.B., A.M. Professor Emeritus of Psychology

McClellan, Charles E., A.B., M.A. Professor Emeritus of Education

Brown, Almeda P., B.S., M.A. Professor Emeritus of Home Economics

Sorensen, Alma Nicholas, A.B., A.M. Professor Emeritus of English

Egbert, S. R., B.S. Assistant Professor Emeritus of Automotive Mechanics
LOCATION OF BUILDINGS AND OFFICES

1. Main Building
   - Secretary-Treasurer, Registrar,
   - Veterans Counselors, Chairman of Public
   - Relations, Auditorium, Experiment Station,
   - Agriculture, Dean of Students, Dean of
   - Women, Life Sciences, Education, Commerce,
   - Bookstore

2. Home Economics Building
   - Foods, Clothing, Textiles, Physiology, Cafeteria,
   - Student Clubhouse

3. Engineering
   - Engineering, Drainage, Surveying, Hydraulics,
   - Mechanical Engineering

4. Widmer
   - Chemistry

5. Animal Housing
   - Dairy, Poultry, Veterinary Housing, Veterinary
   - Scien, etc.

6. Plant Industry Building
   - Botany, Agronomy and Soils, Bacteriology, Biochemistry and Public
   - Health

7. Library
   - English, History

8. Women's Residence Hall

9. Smart Gymnasium
   - Physical Education for Men and
   - Women

10. President's Home

11. Extension Service Offices

12. Mechanic Arts Building
   - Woodwork, Aviation, Radio, Machine
   - Work, Farm Machinery

13. L. D. S. Institute

14. Forestry Building
   - Forest, Range and Wildlife Management

15. Stock Judging Pavilion

16. Green Houses
   - College and Experimental

17. Dairy Barn

18. Veterinary Science Laboratory

19. Poultry Buildings

20. Horse Barn

21. Home Economics Practice Cottage

22. Amphitheater

23. Stadium House

24. Stadium

25. Hog Barn

26. Sheep Barn

27. Heating Plant

28. Testing Laboratory

29. Quadrangle

30. Tennis Courts

31. U. S. F. S. Equipment Shed

32. U. S. A. C. Forest Nursery

33. Rural Arts Building

34. Field House

35. Military Science Building
Faculty

(Including Agricultural Experiment Station, Extension Service, and Branch Agricultural College)

Harris, Franklin S., B.S., Ph.D., LL.D.,
President

Alder, Byron, B.S.,
Professor of Poultry Husbandry and Extension Poultryman

Allen, Bert V.
Instructor in Industrial Education
Photographic Service

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Keech, Russell R., B.S.,
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Parrish, Joseph F., B.S.,
Assistant Professor, County Extension Agent, Juab County

Price, Lew Mar, B.S.,
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Rickenbach, Rodney G., B.S.,
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Smith, Albert E., B.S.,
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Steffen, Hyrum, B.S.,
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Stokes, L. Darrell, B.S.,
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Taggart, Nat M., B.S.,
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Thatcher, Ray A., B.S.,
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Tueller, Lamont E., B.S.,
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Whitaker, William C., B.S.,
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Assistant Professor, Home Demonstration Agent, Summit County

Crawford, Fay, B.S.,
Assistant Professor, Home Demonstration Agent, Sevier County

DeLapp, Ruth, B.S.,
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   Director, Branch Agricultural College

Cooley, Hazen, B.S., M.B.A.,
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Oldroyd, Elva, B.S.,
   Registrar

Robb, Ward S.,
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   Associate Professor of Physics and Engineering
   Chairman, Division of Engineering and Mathematics

Bastow, Mary Lovina, B.S.,
   Assistant Professor of Arts and Textiles

Bell, T. Donald, B.S., M. S., Ph.D.,
   Associate Professor of Animal Husbandry
   Chairman, Division of Agriculture

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   Chairman, Division of Industrial and Vocational Education
FACULTY

*Dalley, Parley, B.S., M.S.,
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   Chairman, Division of Physical Sciences

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Tippetts, Twain, B.A., M.A.,
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Liston, Lee, B.S.,
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   Athletic Coach

Manning, Wm. H., A.B.,
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Nelson, Donald K., B.S., B.L.S.,
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Parks, Hazel, B.S.,
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Peterson, Edwin L., B.S., M.A.,
   Instructor in History and Social Science

Sargent, David L., B.S., M.S.,
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   Chairman, Division of Biological Sciences

FACULTY

Stephensen, A. W., B.S.,
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Tydings, R. Nelson, B.S.,
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Whetten, Lois LaVeve, B.S.,
   Assistant Professor of Physical Education and
   Secretarial Science

   Instructor in English and Modern Languages

   Instructor in Physics and Radio

   Instructor in Physical Sciences

   Instructor in Auto Mechanics

   Assistant Professor of Range Management

   Assistant Professor of Home Economics

*On leave.
# INTRODUCTION

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General Information

LOCATION

Utah State Agricultural College is in Logan, Cache County. The city is a typical college town of 12,000 inhabitants. Highways 89 and 91 intersect at Logan, and the town is served by the Utah-Idaho Central Electric Line, the Greyhound Bus line, and the Union Pacific Railroad. The College is located one mile east of the business section of Logan on a hill overlooking the valley.

POLICY

Utah State Agricultural College in its fundamental policy has always considered the main function of education to be the preservation and improvement of the democratic way of life.

Although the College made available its every resource for the successful prosecution of the war and remains alert to satisfy emergency needs of state and nation, it will continue a full educational offering in the seven schools of instruction. To do less than this would be to weaken the very foundations upon which democracy rests, for now more than ever before the country needs men and women trained for efficient leadership in every branch of human endeavor. Accordingly, the traditional policy of the College will be maintained, which, in accordance with the spirit of the law under which it was organized, is to provide a liberal, thorough, and practical education. The two extremes in education, empiricism and the purely theoretical, are avoided; for the practical is based upon and united with the thoroughly scientific. In addition to the practical work of the different courses, students are given excellent training in the sciences, mathematics, history, English, art, music, speech, modern languages, and other related subjects. The object is to foster all that makes for right living, good citizenship, high efficiency, and general culture.

Under this general policy, the special purpose of Utah State Agricultural College is to be of service in the building of the State and the great West to which it belongs. The instruction in Agriculture, Engineering, and Forest and Wildlife Management, in addition to the purely professional aspects of these fields of study, deals with the special problems relating to the conquest of the great areas of unoccupied lands, the development of engineering structures, the proper use of the water supply, and the kinds of crops or livestock which in Utah and the West may be most profitable. Instruction in mechanic arts points out the most promising trades and teaches them in such a way as to meet the needs of the area. Instruction in commerce relates to the undeveloped resources and the present commercial conditions of the State, and investigates the principles and methods to be applied in the commercial growth of Utah. The School of Home Economics offers training in the various phases of homemaking and for professional life. In the School of Education students are given the professional training which qualifies them for teaching and school administrative positions.

The Constitution of Utah establishes Utah State Agricultural College and the University of Utah as the two State institutions of higher learning. Each of these institutions is independent in government, although each is a part of the public school system. Each, under the Constitution and the Statutes of Utah and in harmony with the ruling of its governing board, offers undergraduate and graduate work leading to the Bachelor's and Master's degrees. The College, in addition to this high status given it in Utah under the Constitution, is one of the fifty-one Land-Grant institutions in the United States designated by the Federal Government as the institutions of higher learning in the respective states for the development of the Federal program of education included in the Morrill and Nelson Acts of the Federal Congress.
HISTORY

Utah State Agricultural College, the Experiment Station and the Extension Service exist today because of far-sighted legislation which created, stated the purposes, and set forth the fields of activity of these divisions. The Morrill Act of 1862 provided for the establishment of Land-Grant Colleges by the grant of Federal lands thus providing a material basis for these institutions. Utah received 200,000 acres. The second Morrill Act of 1890 carried an annual appropriation to each college; the sum to be spent for instruction in designated fields. Additional Federal legislation increased the financial aid to the institution, including the Hatch Act of 1887 for experimental purposes, the Smith-Lever Act of 1914 to aid in beginning and developing extension work, and more recently, the Bankhead-Jones Act which supports all three divisions in some degree. All these acts constituted the basis of Federal participation in the extension of college education and rural agricultural development to the masses of American people. It was a democratic movement in education. Participation by the Territory of Utah in the Federal program of education came through the passage of an act "to establish an Agricultural College and an Agricultural Experiment Station." This bill, introduced into the legislature by Representative Anthon H. Lund on February 27, 1888, unanimously passed both houses and was signed by Governor Caleb West, March 8, 1888.

The purposes of the college have been stated in Federal and Territorial acts. The Federal Land Grant Act of 1862 explained that the colleges were, "without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." The Territorial Act of 1888 confirmed these purposes and defined the fields of instruction offered by the college to include "the English language and literature, mathematics, civil engineering, agricultural chemistry, animal and vegetable anatomy, physiology, the veterinary art, entomology, geology, and such other natural sciences as may be prescribed, technology, political, rural and household economy, horticulture, moral philosophy, history, bookkeeping, and especially the application of science and mechanical arts to the practical agriculture in the field." Though the fields of education increased in number and scope and additional subjects were added to the curriculum in harmony with subsequent legislative acts, each president of the college has reaffirmed the purposes as set forth by the Federal and Territorial founders of the school.

The necessary legislation having been enacted to set up the machinery, the next important task was to establish the college concretely. The Lund Act declared the school should be erected "at any place in Cache county that may be designated by the trustees." Logan and Cache county gave the present site of one hundred acres and in 1889, the contract for the south wing of the main building was let to the contractors. Professor J. W. Sanborn of New Hampshire was chosen as director of the Experiment Station, and in 1890, he came to Utah, arriving in Logan in January. The wing of the building was completed. Members were chosen for the experiment station and the college staff, and in September 1890, the college opened its doors to prospective students. President Sanborn, Professors W. P. Cutter, E. S. Richman, John T. Caine, Jr., Abby Marriott, A. A. Mills, Jacob Sholl, H. C. Everett, and Sarah Goodwin formed the first faculty. The student body of 1890-1891 totaled 129, many of them being below the college rank of those days.

Since its beginning in 1890, six presidents have guided the destinies of the college. Following President Sanborn came President J. H. Paul in 1894, President J. M. Tanner in 1896, President W. J. Kerr in 1900, President John A. Widtsoe in 1907, and President E. G. Peterson in 1916. Dr. Franklin S. Harris, in taking over in 1945, became the seventh president of the institution. From one building in 1890, the number of buildings has reached thirty-seven, the college faculty has grown from 9 in 1890 to 283 in 1943, and the student body has expanded from 139 in the beginning to a cumulative total for the regular school year of 3,393 for 1939-40, when registration reached its peak.
Seven schools: Agriculture, Arts and Sciences, Commercial Education, Engineering, Industries and Trades, Forest, Range and Wildlife Management, and Home Economics, provide professional and cultural training for the students of the College. The institution is on the accepted list of the Association of American Universities and the American Association of University Women. In 1929 the name of the college was changed from Utah Agricultural College to Utah State Agricultural College.

**PHYSICAL PLANT**

The physical plant of the college has been built over a period of half a century, and comprises one of the most beautiful college campuses in the whole country. It occupies more than ninety acres of the large delta built up of gravels and sediments brought down from the Wasatch Mountains to the east by Logan River into ancient Lake Bonneville over thousands of years. Many of the structures and landscape features of the campus still suggest something of the doings of nature in that remote past. Alterations and carvings of the old lake delta into beautiful terraces, curves and elevations, during the times of its ups and downs and since the last receding of the ancient lake to its present Salt Lake remnant, are still outstanding features. Viewed from the College Hill in any direction, north, south, east, or west, the mountains, the valley, the green fields, meandering streams, and the distant horizons with their angular profiles against clear blue skies, all furnish real sources of inspiration and admiration.

**Buildings and Facilities**

To house its many varied and rapidly growing educational and research activities, the College now has thirty-seven carefully planned, mostly modern, steam heated and well lighted buildings on the campus. Identified with each building or group of buildings are to be found centers of student activities and interests which largely go to make up the undergraduate life at the college.

The Main Building, so called, a three-story brick structure more than three hundred and fifty feet long, is the landmark in the history of the institution. This building, whose halls and classrooms have resounded to the voices of the classes coming and going since the college was founded more than fifty years ago, is the hub about which most of the college activities revolve. In it are located the administrative and the business offices of the College and Experiment Station, the departments of Agricultural Economics, Art, Education, Geology, Landscape Architecture, Mathematics, Modern Languages, Music, Psychology, Sociology, Speech, Zoology, and the School of Commerce. The College bookstore is in the basement. The main auditorium of the College, meeting place for most student gatherings, is also located in the east wing of the building. A Little Theatre, used by the Speech department, is on the second floor, west wing. The offices of the Dean of Students, Dean of Women, and the officials who supervise the war veterans enrolled at the College are on the first floor, north wing.

A new combination Home Economics and Commons Building, perhaps the most imposing and carefully planned building on the campus for its multiple purposes, is now the social and cultural center of the College. Architecturally, the building is beautiful and modern in every respect. It is used exclusively for college functions, the students and faculty alike taking advantage of the facilities offered in the way of lounges, reception and ball rooms. The building also houses a beautiful cafeteria with well equipped kitchens and dining rooms which add greatly to the comfort and convenience of the student and faculty patrons. Educationally, this new structure functions on the campus as the housing quarters of the School of Home Economics and classes in Physiology. These several departments are provided with ample space in modern, well-lighted classrooms and laboratories. All research and practice laboratories are provided with standard, scientific equipment. Student Body offices are also located in this building.
The Thomas Smart Gymnasium, a brick structure erected in 1912, is still the center of a large part of the athletic activity on the campus. Since its erection, this building up to a few years ago, housed the department of Physical Education for men and women, Competitive Athletics, indoor and intramural sports, and the offices of the college physician and school nurse, and the whole of the physical education staff. With the completion of the new stadium and athletic field houses, the crowded condition in the Smart Gymnasium has been greatly relieved. The whole of the Department of Competitive Athletics has been relocated with adequate quarters in the new buildings. These changes have brought about a much more satisfactory housing arrangement together with an adequate and efficient physical training plant.

The new Field House, a spacious steel and brick structure, three hundred and fifty-six feet long, by one hundred and thirty-seven feet wide, completed in 1939, has already become a much used building for functional activities of the College. Besides being the new center of college competitive athletics, the building is coming more and more to be used for other larger college and public gatherings. Especially, since the size of the student body became a problem, has the new Field House demonstrated its multiple purpose usefulness by providing adequate space for the annual commencement exercises. Equipped with an excellent basketball playing floor and a seating capacity of more than three thousand, the building now provides ample space to accommodate both students and the public at basketball games or other athletic contests. For indoor tennis, track, softball, and football practice, the building is ideal.

A companion building to the Field House, completed in 1940, is the new Military Science Building, located just a few feet to the east with a corridor connection between the two. This building, a brick-concrete structure, fifty-nine feet wide by one hundred and eighty feet long, now, for the first time in college history, adequately houses the Military Science and Tactics department of the College. It was designed for the special needs of the Military department and is provided with fine offices, classrooms, rifle ranges, gun and equipment supply rooms. A large gun shed is made a part of the building. Because of its location with relation to the Field House, military training the year 'round has been greatly facilitated.

The Extension Service Building, one of the old buildings on the campus, is a two-story brick structure. It was originally occupied by the Experiment Station Staff. Since the College Extension Service became an important function of the institution, this building has been occupied by the Extension Service Staff, and is now the headquarters of a state-wide educational service organization, maintained by the College and Federal Government jointly.

Widtsoe Hall, a three-story, brick-concrete, fireproof building, was constructed in 1915. It is wholly occupied by the departments of Chemistry, Physics, and the Experiment Station Laboratories. All classrooms in the building are well lighted and heated, and provided with desks and equipment for teaching demonstrations and experiments. Chemical and Physical laboratories are furnished with ample facilities and scientific equipment for student training and research in these fields.

The Animal Industry Building, a three-story, brick-concrete structure erected in 1917, is occupied by the departments of Dairy Manufacturing, Animal Husbandry, Poultry, Vegetable Crops, and Horticulture. In its large and well-lighted rooms, the building is exceptionally well equipped with laboratory and classroom facilities for the study and teaching of dairy manufacturing and animal husbandry, including dairy and beef cattle, horses, hogs, sheep and poultry. A modern and fully equipped cheese and butter manufacturing plant occupies part of the building, which is used for practical training in dairy products manufacturing. Complete laboratories for research and studies in animal nutrition and wool grading are new additions in this building. Classrooms and office space for the departments of Vegetable Crops and Horticulture are provided in this building until such time as other and more suitable quarters can be provided for the work in these fields.

The Plant Industry Building is also a brick-concrete structure of four stories, erected in 1917. It is modern in design and arrangement, and houses
the departments of Agronomy, Bacteriology and Biochemistry, Botany, Plant Pathology and Soils. Housed in this building, also, is an excellent Herbarium, located in new quarters on the fourth floor. All the departments housed in this building are provided with well lighted classrooms and laboratories. Laboratory equipment and facilities for teaching and research work are adequate for thorough training in all departments located in the building.

The Engineering Building, a modern, four-story, brick-concrete, fireproof structure, also erected in 1917, was well planned for its special purpose—training in engineering work. The School of Engineering, Trades and Industries has its headquarters here. In this building, all the college work in Civil Engineering, including Surveying, Mechanical Drawing, Hydraulics, Irrigation and Drainage, Municipal and Agricultural Engineering, is taught. This building houses the Hydraulics, Irrigation, Soil Mechanics, and Agricultural Engineering Laboratories, all of which are modern and well-equipped. The Drafting rooms and the Design Laboratories are also housed in this building.

The Mechanical Arts Building, housing the shops of the School of Engineering, Trades and Industries, located on the campus to the south of the Main Building, is another of the older buildings of the college. To keep pace with the rapidly expanding demands for training in automotive radio and aeronautical mechanics, the building has been extensively remodeled and additional floor space provided. It now houses all shops and laboratories on the campus used for the work in the technology in Auto Mechanics, Aeronautics, Woodwork, Forging, Machine Shop practice, Sheet Metal work, Welding, Radio and Electricity. Laboratories, classrooms, shops, radio and sound recording rooms used in these several fields, are adequately equipped to give complete training to students wanting to prepare themselves for the skilled technical trades and for service as technicians in industry. More than $150,000 in new equipment has been added to the shops during the past five years.

The Library Building constructed in 1930, academic and cultural center of the College, is another new building, located on the east side of the campus. Space is also provided in the building for a Children's Library in connection with a beautifully designed special reading room for under-college-age groups. The departments of English and History use the top floor for their classes because of the convenient access to the library stacks.

The Forestry Building, located on the northwest corner of the campus, is another of the older buildings of the College. A four-story, brick structure, in the olden days it was originally a girls' dormitory, and later, the home of the School of Home Economics. Rearranged when the new Commons and Home Economics Building was completed, it now houses the School of Forestry. In this comparatively new educational field, thorough and technical training in the departments of Forest, Range and Wildlife Management is provided by the College. Its classrooms, laboratories and specimen museums are provided with equipment and all facilities for complete training in these new and important fields of national resources. In connection with the Forestry School, the College conducts a Forestry Summer School for students at its own camp, located in Logan Canyon about twenty miles northeast from the College.

Child Development laboratories and practice houses occupy two campus residences immediately north of Widtsoe Hall. In connection with these, outdoor space, well supplied with playground equipment, is available to the important and rapidly growing Child Development movements.

The Campus Residence Hall, a fireproof, air-conditioned building located south and east of the Library, provides modern accommodations for 100 freshman women. Life in the Hall generally is both comfortable and pleasant. Bed linen is provided and laundered by the College.

The Town Residence, converted from a large former Logan residence, houses 46 upper-class women. Life in this hall is pleasantly home-like. Bed linen is also provided and laundered by the College.

Anticipating a permanent Union Building, students began in 1946 to enjoy the recreational facilities of a temporary Union Building east of the Library.
A structure formerly used for military training purposes was converted for this use.

College greenhouses on the campus are now composed of seven complete units which cover 11,588 square feet of planting space. Head houses, built in connection with the greenhouses, furnish ample room for laboratory, storage, and sorting space needed for student training and research in plant breeding and propagation in horticulture, floriculture, vegetables, grains and grasses. In 1939, two new greenhouses were added to the plant, which have greatly relieved the crowded condition in the old houses. The new houses are used largely for experimental work in plant breeding research, insect and disease control.

The College barns include a group of buildings suitable for the care of cattle, horses, sheep, and hogs with ample storage space for supplies of livestock feeds. In the college owned herds on the campus, are to be found individuals and groups representative of various breeds of livestock common to the intermountain section. An experimental demonstration Holstein dairy herd is maintained and operated by the College and Experimental Station on a modern dairy farm located at North Logan, one mile north of the campus. In 1939, more pure bred dairy and beef cattle were added to the herds. Most of these additions are located on farm property recently acquired from Cache County, both of which add greatly to the facilities of the College for training students in livestock feeding and breeding technique.

A Stock Judging Pavilion on the campus, used in common by the several livestock departments, makes it possible to do stock judging under comfortable conditions at all seasons of the year.

The Poultry Plant, built on the colony plan, is adequately equipped for class and experimental research work in poultry husbandry. Among the College flocks are all the important breeds of domestic fowls. The plant is equipped and extensively used for study and research on the best methods of feeding, housing, and disease control in poultry to obtain the most economical production.

The Veterinary Science Building, a one-story brick-concrete structure, and a recent addition to the campus buildings, has office space, a well equipped dispensary, operating rooms, stalls for animals, and modern equipment for training and scientific work in the field of Veterinary Science and Medicine. A veterinary clinic is periodically conducted in connection with the work of this department. The building is equipped for research and clinical work in Veterinary Science and animal diseases.

The Heating Plant of the College is located in one central boiler house on the campus. From this central plant, heat is supplied to all the buildings on the campus by means of steam through distribution lines in underground tunnels. To provide adequate heat for the greatly increased campus requirements of the last few years, the plant was much enlarged in 1939 and put on a high pressure steam operating basis. The plant now has a capacity of approximately one thousand horsepower. The latest addition to the plant was a two hundred ninety horsepower water tube boiler, capable of operating at one hundred percent overload.

Laboratories

The College laboratories, including Animal Breeding, Animal Nutrition, Bacteriology, Botany, Chemistry, Engineering, Entomology, Farm Crops, Geology, Home Economics, Mineralogy, Physics, Physiology, Plant Pathology, Soil Physics, Wool and Zoology, are adequately equipped and provided with satisfactory working conditions. The equipment of the laboratories is generally complete and extensive experimental research work is carried on by the faculty and advanced students in many scientific fields.

College Library

The College Library is designed primarily to provide students with the books, magazines, and documents they need in their resident study programs. Its next purpose is to provide faculty members with the volumes they
need to prepare themselves for their teaching and research functions. However, any citizen of the State may make arrangements to borrow through his home library any book not in actual use or demand. Citizens located near enough to the College to do so, may call and make arrangements to use the library directly.

The collection, which now numbers approximately 100,000 volumes, plus 130,000 government documents, is housed in a building erected in 1930. On the first floor are located the Reserve Book Room, cloakrooms, and the Children's Library, on the second floor the Loan Desk, Reference Desk, and catalogs, indexes, and the main reading room. The third floor is used for classes of the departments of English and History.

The collection of government documents is especially strong as it is a depository library. Furthermore, the Experiment Station Library has been recently incorporated in the Main Library, practically doubling the holdings in the United States Department of Agriculture publications and various state agricultural experiment station bulletins.

The sets of periodical and serial publications, particularly those sponsored by learned societies, are being added to and missing volumes filled in each year. The College subscribes to 620 scholarly journals and receives 136 as gifts. Five major daily papers and 75 weeklies are received.

Herbarium

The Intermountain Herbarium was established in 1932 by action of the Board of Trustees. The function of the herbarium is largely to serve as the repository of plant materials obtained by field exploration, gifts, and exchanges with other institutions; materials that constitute the basis upon which the rich native vegetation of Utah and the Intermountain Region is receiving scientific, economic, and popular investigation and descriptive treatment. From time to time the results of the herbarium researches are released as technical articles published in scientific journals or economic and popular bulletins and circulars released by the Utah Agricultural Experiment Station.

Most of the species that grow in Utah and the Intermountain Region are represented in the herbarium.

The herbarium is likewise the depository of a branch of the College Library, consisting of literature dealing with floristic botany and descriptive taxonomy.

Graduate work in plant taxonomy offered by the Department of Botany utilizes the adequate facilities of the herbarium. These graduate studies may entail thesis researches of a phytographic, revisionary, or floristic nature.

The facilities of the herbarium are also available, by arrangement with the curator, for consultation and research by all qualified members of the College staff, students, collaborating agencies, institutions and members of the community.

Identification of and information concerning native or introduced plants will be provided by the herbarium staff. Requests for information or plant identification should be addressed to the Curator of the Herbarium.

STUDENT ORGANIZATIONS

Government and Traditions of the Student Body Organization

The Student Body organization embraces all the students of the Institution. Its prime object is to foster a proper spirit of college loyalty, and to give the students practice in managing public affairs. It also secures dispatch and efficiency, as well as uniformity, in the administration of all matters pertaining to the entire student body, and encourages all students to participate in a limited number of college activities. A point system of awards to recognize participation in all non-athletic activities encourages high scholarship during participation by means of graduated bonuses for higher scholarship. The
organization provides each member with a maximum of proper athletic, theatrical, and social recreation at a minimum expense. This organization has control, with faculty cooperation, of the following student activities:

1. a. Athletics for men.
   b. Athletics for women.

An intramural program, including all seasonal sports for which awards are given, is conducted.

2. Musicals, including all public performances of the band, the orchestra, and musical clubs. These organizations present several concerts during the year and each group usually tours some part of the surrounding area.

3. Theatricals. There is great activity in the field of the drama, and numerous productions are staged each year by student groups. Students participate in the lighting, staging, directing, and managing, as well as the acting. The performances of recent years have been of high quality.

4. Opera. Each year the Music Department produces an opera. With successful performances of such works as Rigoletto, Faust, Aida, Il Trovatore, Carmen, Student Prince, and Blossom Time, the annual production of an opera or operaetta has become traditional.

5. Debating and Public Speaking. Debating is an extremely popular activity, drawing approximately thirty participants each year. The College is a member of the Rocky Mountain Forensic League and each fall meets schools of this group in debate, oratory, extemporaneous speaking, after dinner speaking, and panel discussion. Participation in the Utah-Idaho Junior College Forensic League and in debate tournaments on the Pacific Coast provides ample opportunity for experience in tournament debating. Intrastate debates are held in the form of a state legislature and are highly successful.

6. Student Publications. The students of the College publish a weekly school paper, "Student Life," the College yearbook, "The Buzzer," and a quarterly magazine, "Scribble," all of which are distributed to all of the regularly registered students. Some campus organizations also sponsor publications of their own such as the Forestry Club's "Juniper."

7. Lyceum Course. The Lyceum program which brings numerous national and international figures to the College is one of the most important Student Body activities.

8. Dances and Entertainments. At frequent regular intervals, the Student Body organization sponsors all-college dancing parties, informal and formal in nature, and regular student body assemblies which provide extensive expression for all student talent. Students with talent and interest in such participation should register with the student Public Service Bureau.

Associated Women Students is an organization made up of all women students registered at the college. Its purpose is to unite the women of the college and encourage activity of women in campus affairs and development of talents.

Campus Organizations

Fraternities, Honorary. Alpha Epsilon Delta (pre-medical), Alpha Kappa Phi (commerce, men), Alpha Zeta (agriculture, scholastic), Blue Key (service), Delta Phi (mission service), Lambda Rho (journalistic, women), Xi Sigma Pi (forestry, scholastic), Phi Kappa Phi, (scholastic, co-educational), Phi Upsilon Omicron (home economics, scholastic), Pi Gamma Mu (social science), Scabbard and Blade (military, men), Sponsors (military, women), Theta Alpha Phi (dramatic, co-educational), Theta Chi (business, women), Fourth Estaters (journalistic, co-educational), Spurs (service, sophomore women).

Fraternities, Social. Beta Kappa, Lambda Chi, Pi Kappa Alpha, Sigma Alpha Epsilon, Sigma Chi, Sigma Nu, Sigma Phi Epsilon.

Sororities, Social. Alpha Chi Omega, Chi Omega, Kappa Delta, Theta Upilon, Gamma Tau.

Clubs. Ag Club (agriculture), Ag Econ, Agora (debating), Independent Students' Association (unaffiliated students), Civil Engineers, Empyrean.
(literary), 4-H Club (social), Foresters, Home Economics Club (home economics majors), Inter-Collegiate Knights (service, men), International Relations Club (discussion group), Ladies' Glee Club, Men's Glee Club, Frateres, Women's Athletic Association, Aggie Veterans Organization.

The offices of the Dean of Students and Dean of Women, in conjunction with other members of the Committee on Social Affairs, render specific aid to all organizations in their financial planning.

ALUMNI ASSOCIATION

The Utah State Agricultural College Alumni Association was organized on June 13 and 14, 1899, by a group of Alumni who met on the campus and formed the Association. At that time there were 44 members. Since then, the Association has shown consistent and rapid growth until it now numbers over 6,500 graduates and approximately 35,000 former students who did not obtain degrees.

The graduates of Utah State Agricultural College have achieved outstanding prominence in every walk of life and every state in the nation. Aggie alumni in large numbers served in the late war, and an exceptionally large number of these men and women held or are holding high commissions in the military and naval forces.

Purpose. It is the purpose of the Association, (1) to form and strengthen friendships among the Alumni; (2) to foster feelings of gratitude and love for the College; (3) to establish beneficial relationships between the Alumni and the College; (4) to promote the interests and welfare of the College and its Alumni; (5) to represent the interests of the alumni in the welfare, standards, and advancements of the College; and (6) to serve as a representative of graduating classes after they have left the Campus.

Membership. Any person who has attended the Utah State Agricultural College one quarter or more may obtain membership in the Alumni Association by making application to the Alumni Executive Committee. All persons receiving degrees, diplomas or terminal vocational certificates from the College automatically become members of the Association. Sustaining membership in the Association may be had by parents of graduates or students or by others who have shown an interest in the College or the Association, upon the payment of annual dues of five dollars. Persons not eligible for regular membership in the Association, but who have done some outstanding service to the Institution are eligible for honorary membership, and may become honorary members upon recommendation of the Executive Committee, and upon being accepted by the Alumni Council.

Dues. Annual dues are $2.00 per year and joint annual dues (husband and wife) are $2.50 per year. Life memberships may be obtained singly at $25.00 or $35.00 for a joint membership.

Government. The governing power of the Association is vested in the Alumni Council composed of fifteen elected members, and ex officio members. From this group, a president and four executive members are chosen. The president and the executive committee select the Executive Secretary and Treasurer of the Association when that position is declared vacant. The Alumni Executive Secretary is the official representative of the Association on the College Campus. Senate Bill 90 which was passed by the 26th session of the legislature and signed by the Governor March 15, 1945, makes the president of the Alumni Association an ex-officio member of the Board of Trustees of the College.

Functions. Besides maintaining a complete record of each alumnus after graduation, two special projects have been originated and sponsored by the Alumni Association—the Library Endowment Trust Fund and the Life Membership Fund. Earnings from the former fund, accumulated from popular subscriptions, are given to the College Library to aid it in the purchase of books which ordinarily could not be bought from the regular library budget.

The principal from the Life Membership Fund has in the past been loaned to worthy students to aid them in finishing their college work. Interest from the loans is used to support the Alumni Association.
The Association serves as a parent organization for several active chapters in Utah which each year sponsors dinner meetings and parties for alumni and former Aggie students in their respective areas.

Since September, 1926, the Alumni Association has published the Utah State Alumni Quarterly, a magazine appearing four times each year and devoted to keeping Alumni members informed of each other's doings, and to maintaining a strong relationship between the Alumni and College.

ALUMNI OFFICERS—1946-47

D. A. Skeen, '09, President.
A. Russell Croft, '20, Past President.
Jack Croft, '24, Executive Secretary and Treasurer.

ACADEMIC REGULATIONS

For purposes of administration, the College is divided into the following major divisions: (1) the Academic, which is administered through eight schools; (2) the Research, administered through two Experiment Stations; (3) the Extension Service; (4) the Summer Session; (5) the Correspondence and Extension Class Work; and (6) the Branch Agricultural College at Cedar City. The Academic regulations apply to all instructional work of regular session, summer session, correspondence and extension study.

Admission

Prospective students are urged to send official transcripts of their credits to the Registrar at least two weeks before the opening of school.

Entrance with college standing is based upon (a) graduation from an accredited high school or (b) upon presentation of fifteen approved high school units of work or (c) by examination of those students eighteen years of age or older who have had other training.

Students who have not been graduated from high school and who are presenting fifteen approved units for entrance may include one unit of credit for military science or one unit of physical education, but not more than one unit in combination.

Entrance by examination will be based upon two types of tests developed by the U. S. Armed Forces Institute or other comparable tests approved and recommended by the American Council on Education. First, the tests of general educational development which are designed to measure the extent to which all of the educational experiences of the applicant for admission have contributed to his ability to "carry on" in a program of general education, or to his educational development of the type which might otherwise have resulted from attendance in a regular academic high school. Second, Subject Examinations: Each of these subject examinations may be used to determine whether the achievement of the applicant for admission is the equivalent of that expected of regular high school students for satisfactory completion of a corresponding course of classroom instruction.

Students who do not otherwise meet the entrance requirements will be required to take the General Achievement Test at the time of entrance. A student who fails this test because of extenuating circumstances prevailing at the moment may upon the recommendation of the Examiner be admitted on a conditional basis and permitted to take an alternative test sometime during the first quarter and, thereby, establish college standing as of the date of original entry.

No credits obtained prior to the time at which college standing was established can be used toward a degree, except that where the amount of high school deficiency is so small that it requires but part of the student's time to carry courses to remove high school deficiencies, the remainder of the student's time
may be spent on college courses and the credit so earned may be accepted to satisfy degree requirements.

The following suggestions are designed to emphasize the desirability of including various studies in the high school program of the student who plans to enter college.

1. English. Since the ability to write clearly and to read with understanding and appreciation is essential, it is highly desirable that the student complete three or four units in English.

2. Mathematics. Not only as a tool to further learning but as a means of providing basic education, mathematics has much to offer. Two years of such study would be profitable. Students planning to specialize in the sciences or in engineering should complete two or more units in mathematics in high school.

3. Social Studies. Social studies—such as history, civics, government, economics, sociology and geography—are basic to the understanding and solution of contemporary problems in the community, in the nation, and in the world. From two to four units may well be devoted to this area by the prospective college student.

4. The Sciences. This field is rich in possibilities for understanding the modern world. Two units in science might well be completed. For those who plan to emphasize science or engineering in college, three units would be helpful.

5. Foreign Languages. The prospective college student might well develop a basic reading or speaking knowledge of a modern foreign language. Some background in one of the classical languages would also be desirable.

6. The Fine Arts. This field offers opportunity for development in an important area of general education which can contribute much toward individual growth.

7. Other Subjects. None of the foregoing statements should be interpreted as meaning that other subjects—agriculture, commercial subjects, home economics, industrial arts, speech, etc.—should be avoided by the student who is planning to attend college. Such subjects, when properly studied, contribute materially to the educational growth of the individual and prepare him for continued study as well as for the more general activities of living.

Students who expect to become candidates for any degree or diploma from any of the schools of the College must include among the units presented those preparatory courses which are specified as prerequisite to the beginning college courses in the various fields. Such students are urged to give serious thought to the matter of selecting a major field of interest. Each student in cooperation with his parents, his high school principal or other high school adviser should plan the high school program of studies so as to meet the requirements for admission to his chosen field of interest. Students who fail to do this may expect to be delayed in starting their college work until the prerequisite courses are made up. Not all of the schools and departments of the college have specified prerequisites, but those which do have, list them in their school and departmental section in the college catalog. This information should be used in planning the high school course.

Transfers from Other Colleges. (Advanced Standing): The College does not grant collegiate credit for excess high school work. Advanced standing for work of satisfactory grade done in some other accredited college, after the completion of 16 units of high school work, may be granted by the Committee on Advanced Standing, provided the student presents satisfactory evidence that the work offered is equivalent to the work for which he wishes to substitute. Transcripts submitted for evaluation become the property of the Institution, and will not be returned. Advanced standing credits, while they may be acceptable toward a degree, will not be included on a transcript of college credits until after the degree has been conferred. Transcripts should be sent to the Registrar two weeks in advance of registration. It is necessary to have them at the time of registration, in order to arrange the course of study properly.

Provisions for Education of Veterans. The Utah State Agricultural College, as a scanning of the catalog will indicate, has a very broad and diverse curriculum. This will make possible the training of ex-service men and women for
many different occupations and at the same time provide ample opportunity for general education.

The College has also made special provision for entrance, vocational advisement and adjustment, acceleration, and curriculum adjustments for these men and women.

It is possible, on the basis of evidence of educational growth since leaving high school and by the demonstration of aptitude for college work on tests for this purpose, for students to enter the College without completing all high school requirements.

Acceleration toward the degree may be obtained by submitting records of formal and informal educational development somewhat equivalent to that which might have been expected from college study and by taking tests of such development. Credit will be given for training received in military service when such training meets the standards of the Institution and is equivalent to courses offered in the Institution. Review and short refresher courses will also be given when found needed.

Registration and Credits

Quarter Credits (Definition): A quarter hour credit is the credit given for one hour of lecture or three hours of laboratory work each week for 12 weeks. Hereafter, for brevity, this unit will be known as a "credit."

Class Standing: Forty-eight credits of approved college work in addition to the prescribed entrance requirements, are required for Sophomore rank; 96 credits for Junior rank; and 136 credits for Senior rank. The foregoing figures include the required credits in Physical Education or Military Science.

Registration Dates: For the Fall Quarter students will register on Thursday, Friday and Saturday, September 26, 27 and 28. Classes will begin Monday, September 30.

For the Winter Quarter, all students will register on Friday and Saturday, January 3 and 4. Classes will begin Monday, January 6.

Registration for the Spring Quarter will take place on Monday and Tuesday, March 24 and 25. Classes will begin Wednesday, March 26.

On each registration day, students will be permitted to register according to an alphabetical schedule to be announced later.

Late Registration: Registrations after the last date given above for each quarter are considered late. A fee of one dollar per day will be charged for those who register late, with a maximum fee of five dollars. In case the registration cannot be completed by the prescribed day, owing to some delay caused by the College or its officers, an exemption may be obtained upon application to the Registrar on the regular day of registration. The amount of work for which any student will be allowed to register will be reduced by one and one-half credits for each week or fraction thereof that a student is late in registering.

Normal Registration: Fifteen credits, exclusive of the one credit of required Physical Education or Military Science, is the normal registration for any one quarter. A student not otherwise limited may, however, with the consent of the Dean or Adviser, register for seventeen credits.

Excess Registration: Registration in excess of 17 credits, exclusive of the one credit of required Physical Education or Military Science, can be granted only by the Attendance and Scholarship Committee upon petition. The necessary forms may be obtained at the Registrar's Office. Excess credit is added to the student's registration by the Registrar's Office after the petition is granted. Students are not allowed to receive less credit than that listed for a course in order to bring the total registration within the maximum limit. The registration is construed to include any Extension, Correspondence, Institute, or other work carried by the student for credit or for removal of high school deficiencies during the period of the school year in question. This
rule does not apply to students taking a prescribed course requiring excess registration as in the Schools of Engineering and Forestry.

If by oversight, the registration card is allowed to be filed with excess credit, the registration will be reduced to the allowed limit as soon as the error is detected.

No student will receive credit for residence work which is not included on his registration card, which must be filed in the Registrar's Office before the end of the quarter. Students who wish to attend regularly any class for which they are not registered, must obtain a visitor's permit from the Registrar's Office. No credit will be allowed for such attendance.

Withdrawal From Classes: The program of courses listed on the student's registration card approved by his dean and filed in the Registrar's Office is considered as the student's official registration for the quarter. A student is held responsible for the satisfactory completion of the entire program. Unless an official "Change of Registration" form is filed with the Registrar's Office, F grades will be recorded in case of failure to obtain passing grades in any of the courses for which the student has registered, regardless of the reason for the failure. Changes are considered official only when signed and approved by the instructors of the classes and the dean.

Incomplete Work: Students are required to complete by the end of the quarter, all courses for which they have registered. This includes Correspondence courses for which the student may be registered on the residence registration fees. Incomplete grades can be granted by an instructor only when permission is granted by the Attendance and Scholarship Committee before the close of the quarter. The necessary petition forms may be obtained at the Registrar's Office.

Incomplete work must be finished, and a passing grade given in the course, within one year of the close of the quarter, otherwise the credit is forfeited.

Credit by Examination: In special cases, students may be permitted to obtain college credit by passing examinations in subjects not taken in course. This privilege does not contemplate the combination of "visiting" or "auditing" a class with a request for a special examination as a means of acquiring credit. Neither does it contemplate outside assignments or outlines on the part of the instructor being combined with an examination to acquire credit. This privilege is intended to measure informal education experience that is the possible equivalent of an organized course given in the college.

A maximum of eighteen credits can be acquired by special examination. None of the last thirty credits presented for a B.S. degree may be obtained in this manner. Unless the examination is taken prior to the close of the second week of the first quarter for which a student enrolls in any given school year, the credits gained will be included as part of the student's load for the quarter.

Petition should be made to the Committee on Special Examination on special forms to be obtained at the registrar's office.

Low Scholarship and Probation. Students who have not maintained an average grade of C or better and students failing to obtain passing grades in 12 or more credits during the preceding quarter are automatically placed in the low scholarship group. No person in the low scholarship group shall be eligible to be elected, appointed, or hold office in the student body organization.

Students in the low scholarship group may be placed on probation for poor scholarship.

Students on probation who violate the terms of their probation are subject to immediate suspension from the college.

When in doubt regarding any of the regulations affecting them, students on probation should consult with the Attendance and Scholarship Committee. This Committee, alone, has the authority to waive or modify the terms of probation.

Students in the low scholarship group should not register for more than 15 credits per quarter, exclusive of Physical Education and Military Science
LOWER DIVISION

Numbering of Courses. The collegiate work of the Institution is divided into three divisions: Junior College, Senior College, and Graduate. Courses numbered from 1 to 99, inclusive, are Junior College courses. Those listed from 100 to 199, inclusive, are Senior College courses. All courses with number 200 or over are graduate courses.

Qualified students may enter courses in any quarter, unless a statement to the contrary appears in the description of the courses.

Junior College students will not be allowed to enter Senior College courses except upon approval of the Dean or Adviser, and the instructor of the course.

LOWER DIVISION

The Junior College comprises the work of the Freshman and Sophomore years. The main purposes of this division are to provide a broad and integrated background in the principal fields of human knowledge, and to fulfill the prerequisites for the major work upon which the student will concentrate in the Upper Division.

Provisions are made in several departments of the College for the issuance of Certificates of Completion for two years of work as prescribed by such departments.

Students who expect to become candidates for the Bachelor's degree should plan their courses with great care through consultation with their faculty advisers, major professors, and deans to insure the best choice of courses for filling the groups and to provide the proper foundation for their advanced work. Failure to do this may necessitate an extra year to complete the work for the desired degree.

Students should satisfy the following requirements, in order to complete the work of the Junior College Division.

1. Remove any deficiencies that may exist in the entrance requirements.

2. Complete 96 credits, or quarter hours of work, (including Military Science and Physical Education) with an average of 75% or higher.

3. Prepare a foundation of at least 15 credits for the field of specialized study in the Senior College.

4. Satisfy the (A) English, (B) Group, (C) Military Science and Physical Education requirements as follows:

A. English Composition.

1. A special placement examination in English is required of all freshmen. This examination is a prerequisite for admission to sophomore composition (English 10 or 11).

2. All students except majors in the School of Engineering are required to take sophomore composition (English 10 or 11) in the sophomore year.

Note: For graduation all students must present at least four credits of advanced English Composition, (English 110) or its equivalent. (To be taken in the Senior College.)

B. Groups: A total of 40 credits must be selected from the following four groups with not less than eight credits, nor more than 12 credits being counted in any one group.

1. Biological Science: At least eight credits must be selected from the following basic Biological Science courses. Not more than 12 such credits can be counted in the total of 40 required in the four groups.
Bacteriology—any course of Lower Division grade.
Botany 1, 21, 22, 23.
Physiology 4.
Zoology 1, 2, 3, 4.

2. Exact Science: At least eight credits must be selected from the following basic Exact Science courses. Not more than 12 such credits can be counted in the total of 40 required in the four groups.
Chemistry—any course of Lower Division grade.
Geology—any course of Lower Division grade.
Mathematics—any course of Lower Division grade.
Physics—any course of Lower Division grade.

3. Language and Arts: At least eight credits must be selected from the following basic Language and Arts courses. Not more than 12 such credits can be counted in the total of 40 required in the four groups.
Art 1, 2, 3, 22, 26, 32, 33, 35.
English—any literature course of Lower Division grade.
Landscape Architecture 3.
Language—any beginning course in French, German, Portuguese, Spanish, or Latin. (No credit in a beginning language will be given toward graduation until at least 14 credits have been earned.)
Music, 1, 4, 5, 11, 12, 13, 80, 81, 89.
Speech—any course of Lower Division grade.

4. Social Science: At least eight credits must be selected from the following basic Social Science courses. Not more than 12 such credits can be counted in the total of 40 required in the four groups.
Agricultural Economics 53a, 53b, 62.
Economics 51, 52.
History—any course of Lower Division grade.
Psychology 3.
Political Science 1, 10, 70, 71.
Sociology 10, 70.

C. Physical Education: Six quarters of work in Physical Education activity classes are required of all women students, and also of all men students who do not take the required courses in Military Science (see Military Science and Tactics).

In departments where there is a prescribed course of study such as in Forestry, and Smith-Hughes Teacher Training courses, and in Engineering Industries and Trades, the completion of such courses shall substitute for the group requirements provided the student remains in that field.

UPPER DIVISION

NINETY-SIX credits (quarter hours of credit) with an average grade of 75% or higher are required for admission to the Senior College Division. Graduates of standard normal schools and junior colleges and students from other colleges who present at least 90 credits of acceptable college work, in addition to the courses in Physical Education or Military Science required at the institution from which they are transferring, may be registered in the Senior College.
The completion of the group requirements in any accredited collegiate institution will substitute for the completion of the group requirements at this institution, as prescribed in the section on the junior college. This does not apply to students who have been pursuing prescribed courses which do not include the group requirements. Students who change from a prescribed course to a major under the group elective system will be held for the completion of the basic group requirements as specified in the section on the junior college. Transfer students who continue on in a prescribed course will be held for the completion of the junior college courses as prescribed at this institution, except as equivalent courses may be accepted as substitutes for our own courses.

Major Subject: The student should select a major subject upon entering, or early the first year, but in no case later than entrance in the Senior College. As soon as the major subject has been selected, the student should contact the head of the department in which he has decided to major. The head of the department will thereafter act as the student's adviser. The student's registration in each succeeding quarter should be carefully checked and approved by this adviser (called the major professor) in order to insure proper selection and sequence of courses for satisfying institutional and departmental requirements.

The Major Department has the authority to prescribe not less than 30, and not more than 50 credits in the major subject (exclusive of any courses which may have been used to satisfy Junior College requirements in any of the groups.) The Major Department and the Dean shall also prescribe such other related courses as may be considered desirable, provided always that the students free electives may not be reduced below 36 credits.

Minor Subject: The student is permitted to choose his own minor. The minor shall consist of 18 credits either in one department or in two departments closely related in nature of subject matter, provided that if the minor is in more than one department it must have the approval of the Dean and the Major Professor.

Courses used to satisfy the English composition, the basic groups, military science or physical education, and freshman orientation requirements as specified under the Junior College cannot be counted in the minimum 30 credits for a major or 18 credits for a minor.

Graduation

The College offers Certificates of Completion for two years of applied work in certain departments, the degrees of Bachelor of Science and Master of Science in all of the Schools of the College; and gives work to fulfill the requirements for all the professional certificates issued by the State Board of Public Instruction.

IMPORTANT: The College reserves the right to change at any time the requirements for graduation, and every candidate for a certificate, a diploma, or a degree shall be held to compliance with such changes, as far as the uncompleted part of his course is affected.

Students are expected to familiarize themselves with institutional rules and regulations. The responsibility for satisfying the requirements for graduation rests upon the students concerned.

Students who do not graduate in the class with which they entered are held to the requirements, including entrance, of the class with which they graduate.

Requirements for the Terminal Certificate

The Schools of Agriculture, of Home Economics, and of Engineering, Industries and Trades offer two-year courses in practical studies leading to a certificate of completion, for those who wish to fit themselves better for their vocation and for life, and who are not interested in the regular four-year course leading to the B.S. degree.
In the Schools of Agriculture and of Home Economics the courses are arranged so that the student may, at a later date, complete the four-year course with a minimum loss of time. While these short courses are designed to develop a broader understanding of the sciences underlying these fields and to lay the foundations for good citizenship, they offer a considerable range of selection of practical courses of both the Junior and Senior College grade.

The general requirements for this Certificate are:
1. Satisfy the entrance requirements (page 39).
2. Complete 96 credits, which includes the required work in Physical Education or Military Science.
3. Complete a Major of 30 credits in one or more closely related departments of the School in which the Certificate is granted.
4. Complete a Minor of 15 credits closely related or basic to the Major-field. This need not be in the same school.
5. Complete 24 credits in the basic groups, as follows: Language, nine, which shall include English 10; Exact Science, five; Biological Science, five; and Social Science, five.
6. Complete 21 credits of elective work.

Only Junior College credit may be obtained for work taken during the short course, even though some Senior College courses be taken.

For additional information, see descriptions of work in the school concerned.

In the School of Engineering, Industries and Trades, definite programs of study are prescribed leading to certificates of completion within definite fields of applied industrial work. These curricula may be found listed on page ...

Requirements for the Degree of Bachelor of Science

The College confers the degree of Bachelor of Science in Agriculture, Forest, Range and Wildlife Management, Arts and Sciences, Agricultural Engineering, Civil Engineering, Commerce and Business Administration, Home Economics, Education, Industrial Arts, or Trades and Industries upon students who meet the requirements specified herewith:

Before a student can become a candidate for a baccalaureate degree, the abstract of his record in College must show: first, that he has satisfied the entrance requirements as prescribed for the class with which he expects to be graduated; second, that the collegiate work for which he has credit, his conditional and other pending credits, the completion of which is reasonably assured, and the work for which he is registered or is planning to register, together satisfy the requirements for graduation including Physical Education and Military Science as prescribed for his class.

Regular students who are planning to graduate at the next Commencement should consult their major professor and jointly prepare the "Admission to Candidacy" form not later than the fourth week of the Fall Quarter. Students planning to complete their work by part-time and summer school, should prepare their applications when they still have 25 to 35 credits to complete. Students will be admitted to candidacy when the plan of course work presented is found to fulfill all remaining requirements for graduation.

Summary of Requirements for Graduation

For students who will graduate in the spring of 1947, the following requirements must be met after satisfying the requirements for admission. The responsibility for satisfying the requirements for graduation rests upon the student concerned.

1. Six quarters of work in Physical Education for women, provided that the candidates who are officially excused from Physical Education present one credit of other work for each quarter that they have been excused.
2. Six quarters of work in Military Science for men unless officially excused from this requirement. Men exempt from Military Science are required to substitute one quarter of Physical Education for each quarter of Military Science from which they are exempt. If exempt from both Military Science and Physical Education, candidates must present one credit of other work for each quarter they have been exempt.

The advanced course consists of the third and fourth year of Military Science. Entrance upon the advanced course is elective, but once entered upon, the course becomes a prerequisite for graduation, unless the student shall be discharged in accordance with the provisions of Army Regulation 146-10.

3. One hundred eighty credits of acceptable collegiate work, exclusive of the required credits in Physical Education or Military Science.

4. Fifty-four credits of Senior College work taken after the candidate has presented at least 90 college credits, in addition to the required courses in Military Science and/or Physical Education or their substitutes.

5. The completion of a major, a minor, and related work as outlined under Senior College.

6. The completion of the group requirements and of the English composition requirements, English 110, or its equivalent, as explained under Junior college requirements.

Paragraphs 5 and 6 above do not apply to students who are pursuing a prescribed course of study such as in Forestry, Smith-Hughes Teacher Training courses, Engineering, Industries and Trades.

7. Of the 186 credits required for graduation, at least 102 must have been earned in resident courses in some accredited collegiate institution. Resident courses are defined as courses taught on the campus, as a part of the regular teaching load of the instructor giving the class, and taught as listed in the catalog or schedule bulletin. Non-resident credits include credits earned through correspondence courses, extension courses, and special examinations. Of the 84 allowable non-resident credits, limitations have been placed on the three groups, as follows: Maximum by correspondence, 37 credits; maximum by extension, 45 credits; maximum by special examinations, 18 credits.

8. Candidates must have been in residence at the Utah State Agricultural College during three full quarters, a full quarter being a quarter in which at least 12 resident credits are earned. Of the last 45 credits presented for the degree, at least 30 must have been earned in residence at the Utah State Agricultural College, and not to exceed 10 credits may have been earned at another accredited institution.

9. Four passing grades, “A,” “B,” “C,” and “D” are employed in reporting credit. No credit with grade lower than “D” can count toward satisfying credit requirements. The maximum number of “D” grades counting as credits shall be 36 credits.

Grade points have been assigned to grades as follows: 3 grade points for each credit of “A,” 2 for each credit of “B,” 1 for each credit of “C,” zero for each credit of “D.” A deduction of one grade point will be made for each hour of failure. For graduation, a student must have as many grade points as he has credits for which grades of “A,” “B,” “C,” “D,” and “F” have been assigned.

10. The candidate must file an “Application for Admission to Candidacy” not later than the fourth week of the Fall Quarter preceding graduation. This application must show the course of study to be followed in order to complete all requirements for graduation, and must be approved by:

(a) The professor in charge of the major subject.

(b) The dean of the school in which the major work is done.

11. The candidate must file an “Application for Graduation” with the Graduation Committee before January 16, containing information requested. Any candidate who fails to file his application for graduation by January 16 may be held over to the next year’s commencement.
12. The candidates must be of good moral character and must have discharged all college fees.

13. Attendance in person at the Commencement and Baccalaureate exercises at which the candidate expects to secure the degree, unless excused in writing by the Graduation Committee for very urgent reasons upon petition from the student.

Requirements for the High School Teacher's Certificate

Students satisfying the following requirements in addition to those for a standard Bachelor's degree will be recommended by the College for the Professional High School Certificate issued by the State Board of Education.

The candidate must have completed a teaching major of at least thirty credits in a subject which is taught in Utah high schools, at least fifteen credits which must be Upper Division work; and a teaching minor of at least eighteen credits in a subject which is taught in Utah high schools. Or, in lieu of this major and minor, a composite major consisting of not less than sixty credits distributed in three related subjects with not less than eighteen credits in any one subject. The candidate must have completed the following subjects allied to education: three credits in School Health Education, three credits in Physical Education, and two credits in Safety Education. He must have ten credits in each of the four following groups: Language Arts; Physical, or Exact Science; Biological Science; and Social Science. He must complete at least thirty credits in professional education including twelve credits in Secondary Observation and Directed Teaching, to include not less than three credits in Principles and Methods of teaching in High Schools; three credits of Organization and Administration of Utah Schools, three credits of Educational Psychology, three credits of Guidance and Personnel and three credits of Articulation of Schools.

STUDENT EXPENSES

1946-47

Resident Students

<table>
<thead>
<tr>
<th></th>
<th>Winter Quarters</th>
<th>Winter Spring Only</th>
<th>Fall Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration Fee</td>
<td>$10.00</td>
<td>$10.00</td>
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</tr>
<tr>
<td>Tuition</td>
<td>51.00</td>
<td>34.00</td>
<td>17.00</td>
</tr>
<tr>
<td>Student Body</td>
<td>12.00</td>
<td>9.00</td>
<td>6.00</td>
</tr>
<tr>
<td>Athletic Fee</td>
<td>6.00</td>
<td>4.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Class Fee</td>
<td>1.00</td>
<td>1.00</td>
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</tr>
<tr>
<td>Building Fee</td>
<td>2.00</td>
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</tr>
<tr>
<td>Total</td>
<td>$89.00</td>
<td>$64.00</td>
<td>$39.00</td>
</tr>
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</table>

If a resident wishes to attend all three quarters but pay fees on a quarter basis, the payments are divided as follows: Fall, $39; Winter, $25; Spring, $25; making a total of $89.00

Non-Resident Students

<table>
<thead>
<tr>
<th></th>
<th>Winter Quarters</th>
<th>Winter Spring Only</th>
<th>Fall Only</th>
</tr>
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<tbody>
<tr>
<td>Registration Fee</td>
<td>$55.00</td>
<td>$55.00</td>
<td>$55.00</td>
</tr>
<tr>
<td>Tuition</td>
<td>51.00</td>
<td>34.00</td>
<td>17.00</td>
</tr>
<tr>
<td>Student Body</td>
<td>12.00</td>
<td>9.00</td>
<td>6.00</td>
</tr>
<tr>
<td>Athletic Fee</td>
<td>6.00</td>
<td>4.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Class Fee</td>
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<td>1.00</td>
<td>1.00</td>
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<tr>
<td>Building Fee</td>
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<tr>
<td>Total</td>
<td>$134.00</td>
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<td>$84.00</td>
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</table>
FEES

If a non-resident student wishes to attend all three quarters but pay fees on a quarter basis, the payments are divided as follows: Fall, $84; Winter, $25; Spring, $55; making a total of $164.

The fees listed above with the exception of the student body fees are the minimum fees required by state law. According to an act passed by the legislature, all legal residents of Utah who enter the College must pay a registration fee of $10, and, in addition, they must pay a tuition fee of $17 per quarter. Students who are not legal residents of the state are required to pay registration fee of $55, covering the entire year in addition to the tuition fee of $17 per quarter.

Students who are unable to pay the full amount of each quarter’s fees are advised to make financial arrangements with financial institutions or with personal friends. In very special cases, students are allowed to sign notes for part of the fees, but this practice is discouraged. A carrying charge fee of $10 will be made for each note signed.

**SPECIAL FEES 1946-47**

<table>
<thead>
<tr>
<th>Course</th>
<th>Fee</th>
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<tbody>
<tr>
<td>Agricultural Economics 70, 102, 106, 113b, 114, 116, 121, 202, each</td>
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<tr>
<td>Aeronautics 1a, 2a, 3a, 11a, 12a, 13a, 122</td>
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<tr>
<td>Aero. 37, 137, 139, 139</td>
<td>$10.00 per clock hour for dual instruction and $8.00 per clock hour for solo instruction.</td>
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<tr>
<td>Automotive, Auto. 12a, 13a, 15a</td>
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<tr>
<td>Auto 41a, 43a, 44a, 45a, 46a</td>
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<td>Auto. 91, 92, 93, 96, 191, 192</td>
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<tr>
<td>Chemistry Laboratory deposit</td>
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<tr>
<td>Children’s Literature 24</td>
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<tr>
<td>Child Guidance 60</td>
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<tr>
<td>Evening Trade Extension Welding</td>
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<tr>
<td>Foods 9, 20, 21, 106</td>
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<tr>
<td>Industrial Education 61a, 62a, 63a, 64a, 65a, 66a</td>
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<tr>
<td>Graduation Fee</td>
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<td>Locker rental</td>
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<tr>
<td>Master’s Degree Fee for binding and proofing thesis</td>
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<tr>
<td>Military Uniform deposit</td>
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<td>Note Fee, per note</td>
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<tr>
<td>Teacher placement fee</td>
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<tr>
<td>Teacher placement re-registration</td>
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<tr>
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</tr>
<tr>
<td>Registration as listener in lecture course in which no credit is derived, per subject</td>
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</tr>
<tr>
<td>Related Training Courses (Lecture)</td>
<td>12.00</td>
</tr>
<tr>
<td>Related Training Courses (Lab.)</td>
<td>20.00</td>
</tr>
<tr>
<td>Related Training Courses (Off Campus)</td>
<td>15.00</td>
</tr>
<tr>
<td>50c per credit hour fee (maximum $5.00 for the year) in the following classes:</td>
<td></td>
</tr>
<tr>
<td>Automotive: 1a, 2a, 3a, 4a, 5a, 6a, 21a, 22a, 23a, 31a, 32a, 33a, 34a, 35a, 36a, 37, 51, 52, 53, 61, 62, 81, 82, 83, 84, 151, 152, 153, 162</td>
<td></td>
</tr>
<tr>
<td>Bacteriology: 2, 101, 104, 106, 112, 116, 120, 207</td>
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<tr>
<td>Chemistry: 3, 4, 5, 10, 11, 12, 15, 102, 103, 107, 108, 109, 110, 111, 116, 120, 121, 122, 123, 124, 133, 140, 240</td>
<td></td>
</tr>
</tbody>
</table>
Dairy Manufacturing: 5, 101, 103.
Farm Machinery Repair: A. E. 13.
Ind. Ed. 42, 113, 123.
Physics: 6, 7, 20, 21, 22, 108.
Zoology: 2, 3, 4, 12, 13, 14, 101, 102, 103, 104, 105, 106, 116, 117, 118, 119, 121, 122, 155.
1¢ per mile for field trips in Forestry, Range and Wildlife and Geology courses as designated in course descriptions.

Graduate students not in residence and wishing to file thesis credit not to exceed 15 hours shall pay a fee of $10.00.

Special examinations may be taken in subjects not registered for, with approval of a special examinations committee, and upon payment of $2.00 per credit hour.

After the first week of each quarter, students changing registration must pay 50 cents for adding and 50 cents for dropping a subject.

Registration is not completed until the student has presented his fee card at the cashier's window, Secretary's Office, and settled for his fees, and filed his registration cards with the Registrar's office.

All students, when paying fees, are given official receipts from the Secretary's Office. These receipts must be presented before refunds are allowed. The students, therefore, should exercise care that the receipts are not lost or mislaid.

All fees except registration fee will be refunded to any student withdrawing from school by the end of the third week of the quarter. No refunds are allowed after the third week.

According to the constitution of the Student Body, every regular student must obtain, at time of registration, a Student Body card which will admit him to all activities controlled by the Student Body organization; athletic events—football, basketball, tennis and track—dramatics and musical entertainments, socials, lectures, etc., and, in addition, give him a copy of the annual yearbook and a subscription to the college paper. This system has been found to be a great saving to the students and a most excellent means of fostering proper interest in student activities.

Since all women students are required to take Physical Education, they must provide themselves with gymnasium suits and gymnasium shoes. The cost is about $5.00.

Each student in Foods and Dietetics, Home Nursing and Household Administration 150, must provide herself with the following: Two washable white uniforms.

The fee for Course 150—General Home Economics which is required for Home Economics education certification is $35.00 for the one-half quarter residence in the Home Management House.

The College maintains a modern, well-equipped cafeteria, where students may eat at cost.

Good board and room in private homes costs from $8.00 to $10.00 a week. By renting rooms and boarding themselves, students are able to reduce considerably the cost of room and board.

Students are held responsible for any damage done by them to the College property.
SELF-HELP

A large number of students of the Utah State Agricultural College earn part of their expenses while in residence. The College itself gives employment to many students, and college officers are glad to be of reasonable assistance to students in finding work.

Young people who expect to earn part of their way through college should, first of all, by earnest labor and careful economy, accumulate as large a college expense fund as possible. It is desirable, if possible, that this sum be sufficient to cover the expenses of the first year. Correspondence or conference with College officials sometimes reveals some way to earn the additional amount needed. The College cannot, of course, guarantee employment to all deserving and needy students. It is an institutional policy, however, to keep all college costs as low as possible in order that capable and worthy students may have the opportunity of college training.

It is the policy of the College to encourage and aid, in every possible way, earnest, ambitious young men and women who want an education and an opportunity to help themselves.

SCHOLARSHIPS, FELLOWSHIPS, AWARDS

The Johansen Scholarship Fund of $5,000, a gift of the late Mrs. Johansen, provides six scholarships annually, worth in the aggregate from $300 to $300, for help of worthy students of Junior or Senior rank. Applications for this scholarship for the succeeding year must be filed with the chairman of the Awards and Honors committee on or before April 1.

The Lieutenant Clyde Parker Baugh Memorial Fund of $10,000, a gift of Mr. and Mrs. Wilford F. Baugh, provides four scholarships annually for deserving students of high scholarship and leadership. Applications must be submitted by April 1 to the Awards and Honors Committee chairman.

KSL Meritorious Scholarships. KSL awards two scholarships in the field of radio, one in technical radio work and one in script writing or broadcasting. Applications should be presented to chairman of Awards and Honors Committee by April 1.

The 1927 Class Gift to the College yields an annual income sufficient to provide two scholarships of $125 each. Application should be made by Juniors to the Awards and Honors Committee on or before April 1. Application must be accompanied by an approved outline of a proposed study project to be completed during the senior year and submitted to the Awards and Honors Committee not later than April 1. Two copies of the complete thesis are to be filed in the College library.

The Rhodes Scholarships. A number of candidates for the Rhodes Scholarships in Oxford University, England, are selected each year from the State of Utah. The scholarships are of the value of $2,000 a year, and are tenable for three years. Students who wish to apply for them must have some social and athletic distinction as well as high scholarship in mathematics, science or letters. All applicants must also have three years of French, and it is advisable to have Latin, German, and English history, as well as high school mathematics. Full information and application blanks may be secured at the President's Office or from Professor Sherwin Maeser, chairman of the Rhodes Scholarship Committee. Students who wish to apply for these scholarships are advised to start preparing for them in the freshman year. They are usually given to Seniors or graduate students.

The Danforth Summer Fellowship is awarded jointly by the Danforth Foundation and theRalston Purina Mills to an outstanding member of the Junior class in the School of Agriculture. The award covers expenses for two weeks in St. Louis and vicinity, and two weeks of leadership training at the American Youth Foundation Camp on Lake Michigan. Forty students from as many colleges are awarded this fellowship. Additional information and application blanks may be obtained from the Dean's office.
Applications for these fellowships should be filed with the Dean of the School of Agriculture on or before April 1.

The Rollo M. Rich Memorial Scholarship is awarded annually to an outstanding student of the senior college who is a major in the school of Agriculture and who has filled a mission for the L. D. S. Church or has otherwise participated in activities of the L. D. S. Church.

Sears Roebuck and Company Scholarships:

For Freshmen in the School of Agriculture the company offers 25 scholarships of $100 each, $50 of which is paid at the beginning of the fall term and $25 at the beginning of the winter and spring terms. Winners are determined on the basis of scholarship, financial need, interest in agriculture, citizenship, moral integrity and rural leadership. The winner of this award who has the best scholarship record at the end of his freshman year will receive an additional scholarship of one or two more years. All applications must be submitted to the Dean of Agriculture before June 1. Application blanks and additional information may be obtained from the Dean's office.

Swift and Company Essay Contest. Each year Swift and Company conducts an essay contest, the winner of which is awarded a free trip to Chicago at the time of the International Livestock show where he will spend approximately a week studying the various phases of the meat packing industry. All essays must be submitted in the Dean's office on or before November 1. Further additional information concerning this contest may be obtained from the Dean's office.

The Leadership Challenge Cup is a gift to the College by Kenneth C. Ikeler and is to be awarded each year to a Senior student in Agriculture who has exhibited the greatest measure of constructive organization and leadership in the School of Agriculture through his College course.

The American Rambouillet Sheep Breeders' Association Challenge Cup was donated to the Animal Husbandry Department by the American Rambouillet Sheep Breeders' Association, to be presented each year to the student showing the greatest efficiency in fitting and showing Rambouillet sheep.

The Ogden Union Stock Yards Challenge Cup is a gift of the Union Stock Yards Company of Ogden and is to be awarded each year to the student who shows the most proficiency in the judging of beef cattle.

The Hawaiian Steamship Company's Challenge Cup is a gift of the Hawaiian Steamship Company and is to be awarded each year to the student who shows the most proficiency in the judging of wool.

The Salt Lake Union Stock Yards Company Challenge Cup is a gift of the Union Stockyards Company of Salt Lake City, and is to be awarded each year to the student who shows the greatest proficiency in the judging of hogs.

The John K. Madsen Challenge Cup is a gift of John K. Madsen, Mt. Pleasant, Utah, and is awarded each year to the student who shows the most proficiency in the judging of sheep.

Home Economics Scholarships and Fellowships

The Phi Upsilon Omicron Scholarship of $25 is given annually by the Kappa Chapter of that organization to the Freshman girl in the School of Home Economics ranking highest on the following points:

(a) Scholarship.
(b) Participation in student activities.
(c) Service and cooperation.
(d) Leadership.
(e) Moral character.
(f) Judgment and reliability.
In addition, the candidate must be a member of the Home Economics Club.

Danforth Foundation Home Economics Fellowships: The first, awarded jointly by the Danforth Foundation and the Ralston Purina Company to an outstanding junior in the School of Home Economics. The award provides for two weeks' study of various business problems in St. Louis, followed by two weeks of leadership training at the American Youth Foundation on Lake Michigan.

The second, awarded by the Danforth Foundation to an outstanding freshman in home economics. The award provides two weeks' leadership training at the American Youth Foundation Camp.

The Home Economics Awards—Certificates of merit conferred annually to senior women in Home Economics adjudged worthy by faculty and Senior students upon the following basis:

(a) Application of Home Economics ideals to daily living, 50 points.
(b) Leadership in class work and other activities, 50 points.

The number of awards shall not exceed 5% of the total graduating class. The candidates eligible shall have a grade point average of two or better.

SCHOLARSHIPS AND AWARDS

An Annual Scholarship of $25 will be awarded by the Chi Omega Fraternity to the girl majoring or minoring in the Social Sciences who gives evidence of superior scholarship, and ability to make a contribution to organized group life.

The Committee of Awards shall be appointed by the Chi Omega Fraternity each year from the teaching staffs of the departments of Sociology and Economics.

Medals and Other Awards

The American Legion Military Medal: A gift of the Logan American Legion Post, is awarded each year to the letterman who maintains the highest scholastic record during the year, and who exhibits the most wholesome attitude towards Military training.

The R. O. T. C. Medal, a gift of the institution, is awarded each year to the student in Military Science and Tactics who most nearly represents the ideal that the Reserve Officers' Training Corps is striving to develop, upon the following basis:

(a) Character, 20 points.
(b) Scholarship, 15 points.
(c) College activity, 15 points.
(d) Leadership, 20 points.
(e) Aptitude for and interest in Military Science, 20 points.
(f) Physique and bearing, 10 points.

The Sons of the American Revolution Medal: A gift of the National Society of the Sons of the American Revolution, is awarded each year to the non-letterman, who is a member of the R. O. T. C., and has shown the greatest interest in his military work.

The Utah State Agricultural College Science Medal, a gift of Director Emeritus William Peterson, is given each year to the student writing the best review of recent scientific research in either mathematics, physics, chemistry, geology, zoology, botany or astronomy.

Scholarship A's in the form of gold pins are given at the Awards and Honors Assembly to students who present evidence that their grades are all "A's" for three consecutive quarters of their residence. At least fifteen credits exclusive of basic Physical Education and basic Military Science must be carried. The grades of any quarter can be used but once towards a Scholarship A award.
Alpha Kappa Psi Scholarship Award. Alpha Kappa Psi Fraternity, Alpha Theta Chapter of which is established at the Utah State Agricultural College, awards annually the Alpha Kappa Psi Scholarship Medalion to the male student of the Junior Class in Commerce who possesses the highest scholastic average for three years of work taken in this college.

Theta Chi Award. Ten dollars is awarded annually by the Theta Chi Women's Business Fraternity to the Junior girl registered in the Secretarial Science department who has the highest scholastic record in Commerce.

Delta Beta Chi Award. Ten dollars is awarded annually by the Delta Beta Chi Chemistry Fraternity to the Freshman or Sophomore Chemistry student who writes the best essay on some subject in the field of Chemistry.

The William Alger Award. A gold key is awarded annually by Alpha Epsilon Delta, premedical society, to the outstanding Freshman premedical or predental student. Scholarship, character and possibilities in the field of medicine or dentistry represent the basis for the award.

The College Award is conferred annually upon the male student of the institution who shows evidence of being able, in greatest measure, to repay the nation the investment which it has made in him, on the basis of the following rating:

(a) The potential vocational or professional efficiency of the student as shown by his scholarly attainment, industry, natural ability and talent (60 points); and

(b) His patriotism, honesty, and good judgment as a student citizen, as an indication of his future attitude as a voter or public servant, combining a progressive spirit with a love of country and a concern for the safety and development of American institutions of liberty and justice and his qualities of social leadership, as shown in student affairs, based upon physical and moral cleanliness and strength of character (50 points).

A College Award is also conferred annually upon the women student of the institution who shows evidence of greatest measure of:

(a) Potential vocational or professional efficiency as shown in scholarship, industry, and natural ability (50 points); and

(b) Womanly qualities, development of the social graces, not necessarily social prominence, and attitude of mind (50 points).

Loan Funds

The U. S. A. C. Faculty Women's League has a loan fund for the women students of the college. Loans may range from $50 to $200. Preference is given to Senior women students. Loans are made at any time during the year when money is available.

The Senior Loan Fund, a gift of the class of 1911, and added to by the class of 1922, has helped many students through school.

Rotary Club Senior Loan Fund. The Logan Rotary Club has provided a special loan fund to assist Seniors in meeting their expenses during the last year of their college course. Further information may be obtained from Mr. N. D. Salisbury, First Security Bank, Logan, or the chairman of the Awards and Honors Committee.
GUIDANCE PROGRAM

This guidance program of the College is concerned with helping the student discover his needs, assess his potentialities, and achieve effective self-direction.

This program is not a specialized separate service apart from the instructional program of the school. Every member of the faculty serves in some guidance capacity.

The instructional phase of the guidance program is centered in the offices of the academic deans. Each dean in turn selects members of his staff to serve with him as advisers to the students in his school.

The Dean of Students serves as a general co-ordinator of the guidance program with the activities centered in his office which pertain to fraternities, clubs, assemblies, student employment, pre-registration advisement, and to the college-owned housing units. "College and Life," (see Education 10,) an orientation course designed for all freshmen, and open to all students who have not chosen a major, is under his supervision.

The Dean of Women serves as an adviser to all women's organizations, as a co-ordinator of campus social affairs, and as a general manager of the college-owned residence halls for women students.

Each sorority house and residence hall is supervised by a competent house mother, who is directly responsible to the Dean of Women. House regulations are drawn up by committees made up of student house managers, student executives, house mothers, and the Dean of Women.

Women students living in apartments in town are urged to report directly to the medical staff or to the office of the Dean of Women. All students are welcome to bring their individual problems to the office of the Dean.

Student Health Service

The College is interested in the physical welfare of its students. Services of a doctor and a full-time registered nurse are available free of charge to the students. Each new student, upon entering the College, receives a thorough medical examination, and whenever necessary, students are re-examined and advised regarding their physical condition. The College pays for x-rays and emergencies which occur on the campus or during competitive athletics. The physician is on call at all times for illnesses and emergencies occurring off the campus and in student's homes.

Speech Clinic

Remedial training is available for those individuals possessing speech handicaps. The types of problems handled include stuttering or stammering, stage fright, slow speech development in children, baby talk, lisping and other disorders of articulation, cleft palate and hare lip, speech, paralytic speech, foreign accent and dialectic speech, "nervous" speech conditions, nasal speech, high or thin voices, etc. All college students who have defective speech should register with the speech clinic where they will receive immediate attention. This training is also available to non-college students.

Psychological Clinic

The Department of Psychology conducts a psychological clinic whose services are available to students in the College, to the public schools of the state, to child welfare and other public welfare agencies, to juvenile courts and adult probation and parole officers, and to private individuals who may apply for them.

The services include:
1. Educational and vocational guidance.
2. Diagnosis and guidance for gifted, subnormal, and delinquent children.
3. Diagnosis and recommendations for treatment of conduct and personality maladjustments.
4. Diagnosis and recommendations for remedial instruction for achievement difficulties in reading, language, arithmetic, general study habits, and other subjects.

5. Assistance to speech correctionists in the diagnosis and corrective treatment of speech defectives.

Except for students registered in the College a fee of approximately $3.00 per hour of professional service will be charged, payable to the Secretary-Treasurer of the College. For the participation of trained student help there will be no charge.

College Citizenship

The college expects its students to exemplify those standards of dependability, honor, and integrity which characterize responsible citizens.

"Students placed on probation for conduct unbecoming to college men and women are not eligible to be elected or appointed to any student body office, or to hold office in the student body organization, or to represent the college as principals in college dramatic, musical events, or as members of college forensic or athletic teams, or any student function."

RELIGION

The officers of the College are deeply interested in the spiritual and moral growth of the students. Every student is encouraged to affiliate with the church of his choice immediately upon registering at the College.
## SCHOOL OF AGRICULTURE

R. H. WALKER, Dean

<table>
<thead>
<tr>
<th>Department</th>
<th>Page</th>
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<tbody>
<tr>
<td>Agriculture</td>
<td>63</td>
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<tr>
<td>Agricultural Economics and Marketing</td>
<td>63</td>
</tr>
<tr>
<td>Agronomy and Soils</td>
<td>65</td>
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<tr>
<td>Animal Husbandry</td>
<td>68</td>
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<tr>
<td>Bacteriology and Public Health</td>
<td>70</td>
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<tr>
<td>Botany and Plant Pathology</td>
<td>72</td>
</tr>
<tr>
<td>Dairy Husbandry and Manufacturing</td>
<td>74</td>
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<tr>
<td>Horticulture</td>
<td>76</td>
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<tr>
<td>Landscape Architecture</td>
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<tr>
<td>Poultry Husbandry</td>
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<td>Vegetable Crops</td>
<td>81</td>
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<tr>
<td>Veterinary Science</td>
<td>82</td>
</tr>
<tr>
<td>Zoology, Entomology and Physiology</td>
<td>83</td>
</tr>
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</table>
General Information

In the postwar period the well trained person will be the one to receive employment opportunities in agriculture as well as in other fields of endeavor. Opportunities in crop and livestock production, marketing, extension work, teaching, research, and the various commercial fields connected with agriculture await students who have an adequate background of basic and technical training. Food shortages throughout the world call for increased production and better distribution and for trained personnel to supervise these programs. Better adapted and higher yielding crops and breeds of livestock, better pest and disease control methods are needed to rehabilitate territories despoiled by war. Increase of soil fertility through prevention of erosion, more widespread use of fertilizers, better control of soil moisture are problems awaiting solution by trained men. Thus a great opportunity and a challenge are open to those students who have an interest and an aptitude for agriculture and who are willing to prepare themselves properly.

The Utah State Agricultural College is well equipped to train young men to meet these needs. Along with the technical courses in crop and animal production, agricultural economics and rural social science, soil management, and others, instruction is offered in mechanic arts and in the basic sciences that underlie practical agriculture. Training is also given simultaneously in English, literature, history, political science, music and the fine arts, hygiene and public health, education and the social sciences, all of which supplement the practical and scientific agricultural training and contribute to the general education of students to a level comparable to that attained by students in other fields.

Instruction includes not only the principles, but also the practice of agriculture. The College farms, dairy manufacturing plant, livestock barns, plant breeding plots, gardens, orchards and technical equipment offer an excellent opportunity for the combination of scientific study and practical experience. Outstanding representatives of the principal livestock and poultry breeds best adapted to Utah conditions afford a “standard of perfection” in desirable type and form for the student judge.

The College maintains an outstanding herd of Hereford and Shorthorn beef cattle. Advance Domino 3d, the present Hereford herd sire, was donated by Sears Roebuck and Company. The Shorthorn herd is headed by an imported bull, Cadet’s Guard. Five breeds of sheep, including Rambouillet, Columbia, Hampshire, Corriedale and Southdowns, are maintained for comparative study. Duroc swine, registered Percheron horses and a thoroughbred Remount stallion are also kept. The College dairy herd is made up of purebred Jersey and Holstein-Fresian cattle. S. C. White Leghorns, New Hampshire and Rhode Island Reds and Barred Rocks are available in the poultry yards. In addition to offering teaching material, many students are given experience in the care and handling of livestock.

The Agricultural Experiment Station is bringing to light better methods of feeding, more productive systems of cropping, more valuable strains of fruits, crops and livestock, more remunerative systems of marketing agricultural products, and other improvements. These investigations are studied by the students first hand, and through the system of student employment, a number take an active part in conducting the research work of the Experiment Station. This arrangement gives, to the students, clearer insight into scientific methods and, at the same time, valuable, practical experience. Special attention is given to improved methods in the various operations of farming and farm building, in the use of tools and machinery, and in the management of livestock and crops.

The great practical value of the various curricula of the School of Agriculture is shown by the records of those students who have completed them and who have gone back to the farm, or who, after graduation, have taken up the work of specialists as teachers or investigators. Such men are proving themselves leaders in their chosen lines of work.

Students entering the School of Agriculture may pursue one of four courses leading to the degree of Bachelor of Science in Agriculture.
**COURSE IN GENERAL AGRICULTURE**

The course in general agriculture is designed to meet the needs of those students who desire a broad general training in scientific and practical agriculture, and wish to qualify for extension service, county agent, or agricultural inspection work, or other types of general agriculture. The curriculum for this course is partially prescribed as outlined on this page.

Unless the student has definitely determined the specific phase of agriculture in which he wishes to major it is usually best for him to follow the curriculum in general agriculture. Later, if he decides to major in a specific field, he can arrange to do so without serious complications.

**COURSE OF STUDY FOR MAJORS IN GENERAL AGRICULTURE**

The student majoring in general agriculture will be required to take at least one course in basic agriculture each quarter with a minimum of 12 credits during the freshman year. The prescribed courses and minimum number of credits in the various fields are as follows:

(a) **Minimum Requirements in Following Divisions:**

<table>
<thead>
<tr>
<th>Division</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Economics</td>
<td>9</td>
</tr>
<tr>
<td>*Plant Sciences</td>
<td>26</td>
</tr>
<tr>
<td>**Animal Sciences</td>
<td>26</td>
</tr>
<tr>
<td>†Agricultural Engineering</td>
<td>9</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>70</td>
</tr>
</tbody>
</table>

(b) **Exact Science, Biology, General Social Science, and Languages.**

<table>
<thead>
<tr>
<th>EXACT SCIENCE</th>
<th>Credits</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math. 34, and 35</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td>Chem. 10, 11 &amp; 12 or equiv.</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td><strong>BIOLOGY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Botany 21 &amp; 22</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Bacteriology 1 &amp; 2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Zoology 2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Zoology 12</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Entomology 108</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Botany 130</td>
<td>5</td>
<td>31</td>
</tr>
<tr>
<td><strong>GENERAL SOCIAL SCIENCE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soc. 10 or Pol. Sci. 10, or Hist. 17</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Agr. Econ. 53a &amp; 53b</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td><strong>LANGUAGES AND ART</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 10 &amp; 110</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>Language and Arts Group</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>152</td>
<td></td>
</tr>
<tr>
<td>Total credits prescribed</td>
<td></td>
<td>182</td>
</tr>
<tr>
<td>Elective</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td><strong>186</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Not more than 15 credits of the 26 to be taken in one department, and the total of 26 credits to be selected from each of the four departments: Agronomy, Horticulture, Landscape Architecture and Vegetable Crops. Soils 56 is required as part of the 26 credits.

**Not more than 15 credits of the 26 to be taken in one department, and the total of 26 credits to be selected from each of the four departments: Animal Husbandry, Dairy Husbandry and Manufacturing, Poultry Husbandry, and Veterinary Science.

†Agricultural Engineering 10 is required as part of the 9 credits.
SUGGESTED COURSES FOR MAJORS IN GENERAL AGRICULTURE

AGRICULTURAL ECONOMICS

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>70—Farm Accounts</td>
<td>3</td>
</tr>
<tr>
<td>102—Prin. of Farm Mgt.</td>
<td>3</td>
</tr>
<tr>
<td>106—Land Economics</td>
<td>5</td>
</tr>
<tr>
<td>110—Marketing Agr. Prod.</td>
<td>3</td>
</tr>
<tr>
<td>113—Coop. Marketing</td>
<td>3</td>
</tr>
<tr>
<td>120—Agricultural Prices</td>
<td>3</td>
</tr>
</tbody>
</table>

PLANT SCIENCES

Agronomy:

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>56—Gen. Soils</td>
<td>5</td>
</tr>
<tr>
<td>1—General Farm Crops</td>
<td>3</td>
</tr>
<tr>
<td>101—Cereal Crops</td>
<td>3</td>
</tr>
<tr>
<td>102—Root &amp; Misc. Crops</td>
<td>2</td>
</tr>
<tr>
<td>103—Forage Crops</td>
<td>4</td>
</tr>
<tr>
<td>107—Fertility &amp; Mtg. Irr. Soils</td>
<td>5</td>
</tr>
<tr>
<td>118—Weeds</td>
<td>2</td>
</tr>
</tbody>
</table>

Horticulture:

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1—Tree Fruit Prod.</td>
<td>4</td>
</tr>
<tr>
<td>8—Small Fruit Prod.</td>
<td>3</td>
</tr>
</tbody>
</table>

Vegetable Crops:

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1—Veg. Prod.</td>
<td>4</td>
</tr>
<tr>
<td>105—Major Veg. Prod.</td>
<td>4</td>
</tr>
</tbody>
</table>

Landscape Architecture:

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3—Elem. Lands. Arch.</td>
<td>8</td>
</tr>
</tbody>
</table>

Range Management:

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>160—Prin. Mg. Range Lands</td>
<td>5</td>
</tr>
</tbody>
</table>

ANIMAL SCIENCES

Animal Husbandry:

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10—Feeds &amp; Feeding</td>
<td>5</td>
</tr>
<tr>
<td>15—Animal Breeding</td>
<td>3</td>
</tr>
<tr>
<td>110—Beef Production</td>
<td>3</td>
</tr>
<tr>
<td>120—Swine Production</td>
<td>2</td>
</tr>
<tr>
<td>125—Sheep Production</td>
<td>2</td>
</tr>
</tbody>
</table>

Dairying:

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1*—Gen. Dairy</td>
<td>3</td>
</tr>
<tr>
<td>3—Gen. Dairy Ind.</td>
<td>3</td>
</tr>
<tr>
<td>6—Market Milk</td>
<td>3</td>
</tr>
<tr>
<td>109*—Dairy Prod.</td>
<td>6</td>
</tr>
<tr>
<td>110—Dairy Prod.</td>
<td>6</td>
</tr>
</tbody>
</table>

Poultry:

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>101, 102**—Poultry Prod. &amp; Lab.</td>
<td>4</td>
</tr>
</tbody>
</table>

Veterinary Science:

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10—Animal Hygiene</td>
<td>4</td>
</tr>
</tbody>
</table>

*Students taking Dairy 1 need not take 109.
**Students taking Poultry 1 & 2 need not take 101 & 102.

COURSES IN SPECIALIZED AGRICULTURE

A student may choose to major in one of the following departments: Agricultural Economics and Marketing, Agronomy and Soils, Animal Husbandry, Bacteriology and Biochemistry, Botany and Plant Pathology, Dairy Husbandry and Manufacturing, Horticulture, Landscape Architecture, Poultry Husbandry, Vegetable Crops, or Zoology and Entomology. Information concerning the curriculum for a major in any one of these departments may be obtained from the head of the major department, who should be consulted before registering.

In order to major in these departments, the student must obtain certain basic training and a general view of the entire field of agriculture and meet the requirements of the department in which he chooses to major. To achieve this background and basic training, the student is required to take at least 1 course in basic agriculture each quarter with a minimum of 12 credits during his freshman year. During the four-year period he must complete at least three credits of basic work in each of the following departments:

Agricultural Economics and Marketing  
Agronomy and Soils  
Animal Husbandry  
Dairy Husbandry and Manufacturing  
Horticulture  
Landscape Architecture  
Poultry Husbandry  
Vegetable Crops

He must also complete the following courses:

- Mathematics 34 and 35
- Chemistry 10, 11, 12, or 3, 4, 5
- Botany 21 and 22
- Zoology 2
- Bacteriology 1 and 2
- Agricultural Economics 53a and 53b
- Sociology 10 or 70, or Political Science 10, or History 17
- Language and Arts, 8 credits
- English 10 and 110
- Agronomy 56
- Agricultural Engineering 10

A total of 186 credits, 64 of which are of senior college grade, are required for graduation from the School of Agriculture.
TEACHER TRAINING COURSE IN VOCATIONAL AGRICULTURE

This course of study is designed to meet the needs of those students who are planning to teach vocational agriculture in rural high schools. In this curriculum, emphasis is given to practical farm experience and broad general training in the basic fields of agriculture and a consideration of the methods and techniques of training youth and adults in the vocation of farming. To be a successful teacher of vocational agriculture, an individual should enjoy public service, have the ability to work with people and influence their lives, complete a broad training in the major enterprises of agriculture, profit by a rich experience in farming, and know how to teach.

The broadness and extent of the training is such that this program is prescribed for the most part. To qualify for certification to teach vocational agriculture in a majority of the western states, the candidate must complete courses in the several fields of agriculture.

PRESCRIBED COURSE OF STUDY FOR MAJORS IN VOCATIONAL AGRICULTURE

Institutional and General Requirements

<table>
<thead>
<tr>
<th>Exact Science:</th>
<th>Cr.</th>
<th>Tot.</th>
<th>Cr.</th>
<th>Tot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Chemistry 10, 11, 12</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Physics</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applied Mathematics</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Mathematics 34</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Biological Science:                                |     |      |     |      |
| *Botany 21, 22                                     | 6   |      |     |      |
| *Zoology                                           | 5   |      |     |      |
| Zoology 12 (Genetics)                              | 5   |      |     |      |
| *Bacteriology 1, 2                                 | 21  |      |     |      |

| Language and Arts:                                 |     |      |     |      |
| (Select 8 Credits)                                 | 3   |      |     |      |
| *Landscaping                                       |     |      |     |      |

*Meets lower division group requirements

Basic Requirements in Agriculture

<table>
<thead>
<tr>
<th>Animal Industry:</th>
<th>Cr.</th>
<th>Tot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeds and Feeding</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Plant Industry:</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Basic and Minimum Requirements in Agricultural and Agricultural Engineering Divisions

<table>
<thead>
<tr>
<th>Animal Industry†</th>
<th>Cr.</th>
<th>Tot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic courses</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Elective</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plant Industry†</th>
<th>Cr.</th>
<th>Tot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic (Soils 56)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>16</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agricultural Economics (Including Irrigation)</th>
<th>Cr.</th>
<th>Tot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Elective</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Applied Entomology and Plant Pathology</th>
<th>Cr.</th>
<th>Tot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Elective</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agricultural Economics</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Elective</td>
<td>6</td>
<td>12</td>
</tr>
</tbody>
</table>
Total Requirements

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>81</td>
</tr>
<tr>
<td>Education</td>
<td>30</td>
</tr>
<tr>
<td>Institutional and General</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>186</td>
</tr>
</tbody>
</table>

Basic courses must be elected from at least two departments

TECHNICAL COURSES IN AGRICULTURE

For students who plan to do graduate work or to enter into a field of employment where technical training is required, a technical course is provided in each of the following fields: Agricultural Economics, Animal Husbandry, Bacteriology, Botany, Dairy Husbandry, Dairy Manufacturing, Horticulture, Landscape Architecture, Poultry Husbandry, Soils, Vegetable Crops, and Zoology, Entomology and Physiology. Students may register for these courses only upon permission of the head of the department and permission from the Agricultural Council. Minimum requirements of six credits each in Plant Industry, Animal Industry and Agricultural Economics must be met by students taking these courses.

NON-DEGREE COURSE IN AGRICULTURE

The School of Agriculture also offers a two-year non-degree course in practical agriculture for those students who do not wish to take more than two years of college work. A student may register for any of the regular non-prerequisite production, marketing and management courses in the School of Agriculture. Emphasis in these courses is placed on the practical problems confronted on the farm.

SUGGESTED COURSES OPEN TO STUDENTS IN THE NON-DEGREE COURSE IN AGRICULTURE

- Agricultural economics 53a & 53b, 70, 102, 110
- Agricultural engineering 10, 14a, 15a
- Agronomy 1, 56
- Animal husbandry 1, 10, 15
- Dairy husbandry 1, 3
- Horticulture 1, 8
- Landscape architecture 3
- Poultry husbandry 1 & 2
- Vegetable crops 1
- Veterinary Science 10

Besides completing a 20-credit major in either the plant sciences, the animal sciences, or agricultural economics, the student is required to take six credits in the groups in which he does not major. For example, a student majoring in animal science must complete in addition to 20 credits in his major field, 6 credits in plant science, 6 credits in agricultural economics, and 6 credits in agricultural engineering. He is also required to take the following courses:

<table>
<thead>
<tr>
<th></th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 2</td>
<td>3</td>
</tr>
<tr>
<td>English 10</td>
<td>5</td>
</tr>
<tr>
<td>Math. 34</td>
<td></td>
</tr>
<tr>
<td>Pol. Science 10, or History 17, or Rural Sociology 10</td>
<td>5</td>
</tr>
</tbody>
</table>

Students in the non-degree course must complete 90 credits to obtain a certificate.
Agriculture

Faculties of Various Departments Make Up This Staff

Students wishing to major in General Agriculture should follow the suggested course of study given on page 59. Those interested in preparing themselves for teaching in Vocational Agriculture should be guided by the curriculum on page 61.

These courses are designed to give the student a broad general training in practical and scientific agriculture that will equip him for farming and rural leadership and at the same time prepare him for professional work in agriculture.

110. General Agriculture. Lectures and laboratory work in the various fields of General Agriculture designed especially for students preparing to teach in the rural schools. Five credits. Winter, Lect., M. W. F. 2; Labs., T. Th. 2-5.

Agricultural Economics and Marketing

Administered jointly by the School of Agriculture and the School of Commerce

W. P. THOMAS, Professor; G. T. BANCH, .........., Associate Professors; B. A. BROADBENT, G. A. CARPENTER, E. M. MORRISON, Assistant Professors.

Students majoring in the Department of Agricultural Economics and Marketing may be graduated from either the School of Agriculture or the School of Commerce. The choice of school in which to register should be determined by the field in which the student intends to do his minor work.

Those graduating from the School of Agriculture must satisfy requirements for graduation from that school in addition to agricultural courses prescribed by the major professor; those graduating from the School of Commerce must, in addition to satisfying the requirements for graduation from that school, include certain basic agricultural courses to be prescribed by the major professor.

In order to meet the requirements of students who plan to do graduate work or to enter into a field of employment where technical training is required, a special course has been provided for such students majoring in agricultural economics. Students satisfying requirements as prescribed for this course may graduate from either the School of Agriculture or Commerce. A schedule for this prescribed course may be obtained from the office of the Department of Agricultural Economics.

An adjustment in courses, sections, and subject matter may be made to accommodate returning service men and other students provided there is a sufficient number of students interested to warrant the change.

Rural Economy

53a and 53b. Principles of Economics. An introductory course in basic principles of economics with emphasis on those principles which are of particular importance in the field of agriculture and forestry. Three credits each quarter.


53b: Winter, Sec. 1, T. Th. 10, F. 12. Sec. 2, M. W. F. 1. Spring, Sec. 3, T. Th. 10, F. 12; Sec. 4, M. W. F. 1. Morrison

54. Principles of Agricultural Economics. An introduction to the field of agricultural economics with emphasis on the application of economic principles to the solution of agricultural problems. Three credits. (Not given 1946-47.)

Farm Management, Land Economics and Agricultural Finance

70. Farm Accounts. Farm accounts and their application to the organization and management of farms and to the filing of income tax statements. A fee of $1.00 will be charged for materials supplied. Three credits. Fall, T. Th. 8, M. 3-5, Winter, T. Th. 8 M. 3-5 Morrison

102. Principles of Farm Management. A study of the principles underlying the organization, management, and financial success of farms. Rates of production, labor efficiency, combination of enterprises and farm layout will be discussed. A fee of $1.00 will be charged for materials supplied. Three credits. Winter and Spring. Winter, M. W. F. 9; Spring, M. W. F. 8. Blank


106. Land Economics and Utilization. A study of the economic principles underlying the utilization, valuation and tenure of agricultural land. Attention is given to prevailing land policies and to methods and techniques involved in dealing with problems of land use. A fee of $1.00 will be charged for materials supplied. Five credits. Spring, Daily 9. Blank

202. Advanced Farm Management. Designed primarily to give students advanced training and experience in farm management. Prerequisite: Ag. Econ. 102. A fee of $1.00 will be charged for materials supplied. Three credits. Spring, T. Th. 3-5. Blank

206. Land Appraisal and Classification. A basic course in land appraisal and economic classification of land. Two credits. Spring, T. Th. 3-5. Blank

Marketing and Prices


113a. Farm Cooperatives. A course in principles underlying the organization, operation and management of cooperative sales, purchasing and service associations. Three credits. Spring, M. W. F. 1. Thomas

113b. Analysis of Farm Cooperatives. For students who desire detailed work in organization and management of cooperatives. Prerequisite, 113a. A fee of $1.00 will be charged for materials supplied. Two credits. Spring, Th. 1-3. Thomas

114. Marketing Fruits and Vegetables. The production and marketing factors as they relate to the marketing of fruits and vegetables with special reference to Utah conditions. Three Credits. Fall, M. W. F. 10. Staff

116. Marketing Livestock and Livestock Products. The production and marketing factors as they relate to the marketing of livestock and livestock products with special reference to Utah conditions. A fee of $1.00 will be charged for materials supplied. Three credits. (Not given in 1946-47.) Staff

120. Agricultural Prices. The relationship between agricultural and non-agricultural prices and income, together with the state and national agricultural outlook reports, will be given consideration. Three credits. Winter, M. W. F. 11. Thomas
121. Price Analysis. A study of statistical and other methods used in analyzing prices and other economic data. A fee of $1.00 will be charged for materials supplied. Three credits. Spring, M. W. F. 10. Staff

Special Graduate Courses

210. Research Methods in Agricultural Economics. A fee of $1.00 will be charged for materials supplied. Three credits. Spring, T. Th. 3-5. Blanch

214. Research in Agricultural Economics. Thesis. Any quarter. Time and credit arranged. Staff

215. Special Problems in Agricultural Economics. Any quarter. Time and credit arranged. Staff

Agronomy and Soils


Study and research in the Department of Agronomy and Soils are built around the problems of crop production in arid regions. The course offerings emphasize the interrelations of plants, soil and irrigation water in the production of maximum crop yields under a variety of conditions. Three types of major study are offered: General Agronomy, Technical Soils, and Technical Crops.

A major in General Agronomy prepares the student for positions related to the management of soils and the field production of crops. Students interested in soil conservation work usually major in general agronomy but may partially specialize in either crops or soils. This training is preparatory to such positions as agronomists, conservationists, farm planners, or soil scientists. Many agronomy majors are employed as field men for sugar beet companies, seed companies, fertilizer distributors, and canning companies. Special curricula have been worked out with a major in General Agronomy and preparing the student for such field work. Studies in General Agronomy are also designed to meet the needs of students who desire to farm, to be county agricultural agents, or to take field positions related to soils or crop production with various other state and federal agencies.

Majors in Technical Soils or in Technical Crops are prepared for graduate work or technical employment in the two fields. Students of high scholastic standing and with special interest in the fundamental sciences will find distinct opportunity in these fields of study. Students interested in graduate study should consult members of the department staff. Special emphasis is given in graduate research and study to crop improvement, soil fertility and soil technology, and moisture relations of soils and plants as they pertain to arid and irrigation agriculture.

A SUGGESTED COURSE IN GENERAL AGRONOMY

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*On leave.
NOTE: See School of Agriculture requirements on page 59.

By special permission, Chem. 10 and 11 may be substituted for Chem. 3, 4, and 5. Physics 6 and 7 may be taken instead of Physics 3. Chem. 121 and 122 may be taken instead of Chem. 12.

All majors in Agronomy are required to take the following courses:
Agronomy 101, 102, 103, 56, 107, 115.

Majors in technical soils will be required to take the following courses: Chem. 102, 103, 121, 122; Math. 28; Physics 20, 21, 22; Agron. 115, 114, 126; and Geol. 3 in addition to courses listed for all majors.

Majors in technical crops will be required to take the following courses: Chem. 121 and 122, Botany 30 and 120 or 130, Agron. 109 and 115 in addition to those listed for all majors.

1. General Farm Crops. A general introductory course in crop production. Three credits. Fall, Winter, T. Th. 8, Lab. W. 2-5. Staff


18. Weeds. Identification of weed seeds and plants, the weed problems in agriculture and methods of control. Two credits. Fall, Th. 9; Lab., Th. 2-5. An assessment will be made for field trips. Evans


57. Introductory Soils Laboratory. This course offers credit for the laboratory of Agronomy 56 for students who have had a general soils course without a laboratory. One credit. Given the same time as Agronomy 56 laboratories. Evans

58. General Soils. A special course in fundamentals of soils with emphasis on range and forest soil problems. Designed for students in forestry and range management. Prerequisite: Inorganic Chemistry. Five credits. Spring, M. T. W. Th. 11. Lab., W. 2-5. (Credit not to be given for both 56 and 58.) Thorne and Peterson
Soil Microbiology. (See Bacteriology 100.)

101. Cereal Crops. The classification, history and cultural methods involved in production of cereal crops. Three credits. Fall, T. Th. 10; Lab., T. 25. Tingey

102. Root and Miscellaneous Crops. Sugar beets, potatoes, cotton, tobacco, mangels, and other root crops are studied in detail as to cultural methods, market types, and commercial possibilities. Two credits. Winter, T. Th. 8. Evans

103. Forage Crops. Alfalfa, clovers, grasses and other farm forages; classification and methods of production, harvesting and storage; meadow and pasture management, are discussed. Attention will be given to the place of these crops in rotation, soil conservation, and erosion control. An assessment will be made for field trips. Four credits. Spring, M. W. F. 8; M. or T. 2-5. Evans

105. Seed Analysis and Testing. Impurities of farm and garden seeds; methods of analysis and testing; the inspection and marketing of seeds. Not given except on application of three or more students. Any quarter. Two or more credits. Two or more laboratory periods a week. Time arranged. Tingey


111, 112. Agronomy Seminar. Review and discussion of current agronomic problems and practices. Required of all seniors in department. One credit each quarter. Fall, Th. 11. Winter, T. 1. Staff

114. Soil Survey and Land Classification. The influence of environmental factors of soil profile development. Soil and land classification, the methods of mapping soils and the preparation and interpretation of soil type, alkali and land classification maps as related to Utah conditions. One field trip will be made to study the soils of the state. Prerequisite: Agronomy 56 or previous arrangement with instructor. Three credit. Spring, M. 1. M. W. 2-5. Wilson

115. Biometry. Application of statistical principles to the design of biological experiments and the analysis of the data. Prerequisite, Math. 35, or its equivalent. Three credits. Winter, M. W. F. 8. Tingey

116. Dry Farming. Principles of dry farming from practical and scientific standpoints; a survey of agricultural work in the Great Plains and the Mountain regions; and analysis of the possibilities in typical climatic areas, and on important soil types. Three credits. Spring, M. W. F. 9. Bracken

117. Geography of Agriculture. A brief review of the fundamental principles of climatic controls. The principal agricultural regions of the world will be studied from the standpoint of their topography, climate, soils, crops, livestock, population and industries as related to agriculture. Three credits. Winter, M. W. F. 11. Pittman


125. Soil Conservation. Special problems of soil management and land policy in relation to soil conservation. Practice in making use of soil conservation surveys in planning farms on a soil conservation basis. An assessment will be made for field trips. Prerequisites: Eight credits in soils and six credits in farm crops. Three credits. Spring, T. Th. 8; lab., Th. 2-5. Peterson

150. Special Problems. Three credits. Arranged. Staff

155. Soil and Plant Relations. Plant and soil relationships with respect to physical environment and the availability and absorption of minerals. Laboratory in soil and plant analysis in relation to soil productivity. Prerequisite: Agronomy 56. Three credits. Fall, T. Th. 9. Lab. W. 2-5. Thorne


201. Advanced Farm Crops. This course will deal with the technical phase of recent advances in crop production. Three credits. Fall. Time arranged. Alternates with Agron. 209. Given only for three or more graduate students.

209. Advanced Plant Breeding. The science and practice of plant breeding. Original papers and lectures. Three credits. Spring, two lectures, one laboratory, time arranged. This course alternates with Agron. 201.


218. Special Problems. Special problems in crop production, crop breeding, soil fertility or other phases of agronomic work will be investigated. Students will make a review of the literature on the problem and conduct experiments in the laboratory or on field plots. Any quarter. Time and credit arranged.

230. Research and Thesis. Outlining and conducting research in soils or farm crops and preparation of thesis. Any quarter. Two or more credits each quarter.

Animal Husbandry

L. L. Madsen, A. C. Esplin, G. R. Henderson, Professors; L. E. Harris, T. D. Bell, Associate Professors; J. A. Bennett, J. V. Christensen, M. A. Madsen, Assistant Professors.

Students majoring in Animal Husbandry will be expected to complete courses Nos. 1, 6, 10 and 15, and 40 during the Freshman and Sophomore years, and courses 110, 125, 150, 155, 160 and 165 during the Junior and Senior years. Courses numbered 200 and above are designed for graduate students only.

For those students who plan to take up livestock production, county agent work, vocational agriculture teaching or some similar field of work, a minor in Agricultural Economics, Agronomy, Dairy Husbandry, Poultry Husbandry or Range Management is recommended.

Students who plan to do graduate work may be admitted to the technical course in Animal Husbandry by permission of the Head of the Department and the Dean. For such students a minor in Chemistry, Physiology or Zoology is suggested.

1. Fundamentals of Animal Husbandry. A course planned to give the student an understanding of livestock production in relation to other phases of agriculture in the United States and Utah, the influence of geographical location and conditions upon livestock production, the various types of farm animals and the functions performed or products produced, and an introduction to the important factors in the successful production of livestock. Three credits. Fall, Spring, M. W. F. 1.
5. Livestock Judging and Selection. A study of animal form and its relation to the function of the animal. Emphasis is placed on the evaluation of the live animals in terms of their probable value for the production of meat, wool or work. Emphasis will be placed on judging for both commercial and showing purposes. One or three credits. Spring, M. W. F. 2-5. 
M. A. Madsen

Harris


20. Fur Farming. A study of the breeding, feeding, diseases, management and marketing of furs of the various domestic fur animals, especially foxes, mink and rabbits. Two credits. Winter, T. Th. 10. Harris and Minor

40. Fitting and Showing Livestock. A study of current methods of fitting and training livestock for showing. Each student will prepare one animal for show and exhibit it in the fitting and showing contest held during the spring quarter. One to two credits. (One credit a year. May be repeated.) Spring, time arranged. Bennett

110. Beef Production. A study of the factors involved in the economical production of beef cattle, including organization of the enterprise, breeds of beef cattle, selection of suitable breeding stock, production of maximum calf crop, handling and feeding of animals of different ages on the range and in the feed lot, and the marketing of surplus stock. Prerequisite, A.H. 10. Three credits. Fall, M. W. F. 8. Harris


120. Swine Production. A study of systems of production with emphasis on those suited to western conditions, breeds of swine, the management and feeding of the breeding herd, and feeding for market. The relation of the industry to dairy farming is discussed. Prerequisite, A. H. 10. Two credits. Winter, T. Th. 10. Bennett


150. Animal Nutrition. Attention will be given to various fundamental phases of animal nutrition, including protein, carbohydrate, fat and mineral metabolism, vitamins, content and deficiencies of range forage, and feed and forage poisoning. Prerequisites: Chem. 10, 11, 12 (or equivalent), and An. Hus. 10, or Bact. 111. Four credits. Fall, M. T. W. F. 9. L. L. Madsen

151, 251. Nutritional Disease. Special consideration will be given to cause, detection, treatment and prevention of the major nutritional diseases of laboratory and farm animals. Prerequisite: An. Hus. 150. Three credits. Winter, M. W. F. 1. L. L. Madsen

155. Advanced Animal Breeding. Attention will be given to various fundamental phases of physiology of reproduction, genetics, breeding systems and to problems arising in breeding operations. Prerequisites, A. H. 15 or Zool. 12. Three credits. Spring, M. W. F. 10. Bennett
160. Livestock Production Problems. Attention will be given to various problems in livestock production, particularly those existing in Utah. Students will be expected to apply knowledge acquired in previous courses in the solution of problems they will face in the field after graduation. Prerequisite, A. H. 110 and 125. Three credits. Winter, M. W. F. 8. Staff

165. Advanced Livestock Judging. This course is a continuation of the training begun in A. H. 5, and is designed to give students intensive training in livestock judging and selection. The Livestock Judging Team will be selected from among the students taking this course. Prerequisite, A. H. 5. Three credits. Fall, M. W. F. 2-5. M. A. Madsen

175, 275. Wool Technology. A study of the methods of marketing and manufacturing of wool, and of the various laboratory techniques used in the study of wool. Methods of grading, scouring, and measuring length, diameter, crimp, density, tensile strength and other characteristics are included. Prerequisite, A. H. 125. Three credits. Winter, T. Th. 10; Lab. Th. or F. 2-5. Espkin and M. A. Madsen

200. Problems in Animal Breeding. This course will consist of special assignments, reports and discussions. Students will be expected to review literature in various phases of animal breeding, and to prepare a comprehensive and critical review of at least one phase of the subject. Two to six credits. Fall, Winter, or Spring. Time arranged Bennett

210. Problems in Animal Nutrition. Same as A. H. 200, except work will be in animal nutrition. Two to six credits. Fall, Winter, or Spring. Time arranged L. L. Madsen and Harris

220. Problems in Animal Production. Same as A. H. 200, except work will be in animal production. Two to six credits. Fall, Winter, or Spring. Time arranged. Staff

230. Animal Breeding Research. Students will be expected to outline a research problem in some phase of animal breeding, making a critical review of pertinent literature, collect and analyze the necessary data and prepare a report of the work done. This work may be the thesis material for the M.S. degree, or may be carried out for graduate credit apart from the thesis. Two to five credits. Fall, Winter, Spring. Time arranged. Staff

240. Animal Nutrition Research. The same as for A.H. 230, except that research will be some phase of animal nutrition. Two to five credits. Fall Winter, Spring. Time arranged. L. L. Madsen and Harris

250. Animal Production Research. The same as for A.H. 230, except that research will be in some phase of animal production aside from breeding or nutritional problems. Two to five credits. Fall, Winter, Spring. Time arranged. Staff

260. Animal Husbandry Seminar. Round table discussion of topics of current interest. Graduate students and staff will participate. Assignments will include reviews of literature on various topics in animal breeding, nutrition and production, reports on current literature, and presentation of results of experiments being conducted in the Department. One credit (may be repeated). Fall, Winter, Spring. Time arranged. Staff

Bacteriology and Public Health

Administered jointly by the School of Agriculture and the School of Arts and Sciences

J. E. Greaves, Professor Emeritus; W. W. Smith, Professor; K. R. Stevens, Associate Professor; L. W. Jones, Assistant Professor.

See pages 43 and 44 for courses that may satisfy group requirements.

Students majoring in the Department of Bacteriology and Public Health should complete Physics 6, 7, or 21, 22; Mathematics 46; Chemistry 12 or 122; Botany 21, 22; Zoology 4; and Bacteriology 1, 2, or 10, 107, 104, 110, 111, 112.
1. Elementary Bacteriology. Deals with the biology and significance of bacteria and other microorganisms; their morphology and physiology; and includes the fundamental principles governing the bacteriology of water, sewage, milk, food sanitation, communicable diseases, etc. Where possible this course should be accompanied by Bacteriology 2. Four credits. Fall, M. W. Th. 10, 11. Winter, M. W. Th. F. 10, 11. Spring, M. W. Th. F. 11. Staff

2. Elementary Bacteriology Laboratory. Experiments on the more important phases of Elementary Bacteriology. One credit. Fall, Winter or Spring. Th. or F. 2-5. Staff

10. General Bacteriology. General fundamentals and principles and their application; special consideration will be given to the influence of environment on microorganisms and to the role of microorganisms in the applied fields. Recommended for students in Agriculture, Foods and Nutrition, and Dentistry. Prerequisite: One year of chemistry. Five credits. Fall, Winter or Spring. W. F. 10. Lab. M. W. 2-5. Staff

50. Control of Infectious Disease. The mechanism and practice of avoiding or controlling infectious disease. Two credits. Fall, T. Th. 10; Winter, M. F. 8. Smith

100. Soil Microbiology. Microorganisms are considered in relationship to their role in soil fertility and organic matter decomposition. Graduate students who have taken Bacteriology 111 may arrange with the professor in charge to substitute advanced credit, and register for 200. Where possible this course should be accompanied by Bacteriology 101. Prerequisites: Bacteriology 1, 2 or 10; Agronomy 56; Organic Chemistry. Three credits. Winter, M. W. F. 11. Stevens

101. Soil Microbiology Laboratory. Experiments to demonstrate the fundamentals discussed in the lecture course. Two credits. Winter, T. Th. 2-5. Stevens

102. Industrial Microbiology. The relation of microorganisms to industrial fermentations. Prerequisites: Bacteriology 1, 2 or 10; Organic Chemistry. Three lecturers; two three-hour laboratory periods. Five credits. Winter, M. W. F. 9, M. W. 2-5. Stevens

104. Dairy Bacteriology. The microorganisms of milk and dairy products and their relation to the production, spoilage, and sanitation of such products. Prerequisites, Bacteriology 1, 2 or 10. Three credits. Fall, M. W. F. 8. Staff

105. Dairy Bacteriology Laboratory. Experiments to demonstrate the fundamentals discussed in the lecture course. Two three-hour laboratory periods. Two credits. Fall, T. Th. 2-5. Staff

106. Pathogenic Bacteriology. Deals with the properties and characteristics of pathogenic microorganisms and their relation to the cause, prevention, and control of the infectious diseases. Prerequisites, Bacteriology 1, 2 or 10. Three lectures; two three-hour laboratory periods. Three or five credits. Spring M. W. F. 8, T. Th. 2-5. Staff

107. Systematic and Determinative Bacteriology. Isolation, identification, and classification of bacteria. Prerequisite, Bacteriology 1, 2 or 10. Two credits. Spring, M. W. 2-5. Staff


112. Biochemistry Laboratory. Experiments to accompany Bacteriology 111. Two credits. Spring, T. Th. 2-5. Greaves

115, 116, 117. Advanced Biochemistry. A study of the chemical transformations going on in the animal body. The class will be conducted much as a seminar. Graduate students may arrange with the professor in charge for graduate credit, and register for 215, 216, 217. Two credits each quarter. Fall, Winter, and Spring, T. Th. 1. Greaves

120. Food Microbiology. A study of the microorganisms involved in food production, distribution, and preservation. Prerequisites: Bacteriology 1, 2 or
10. Organic Chemistry. One lecture; two three-hour laboratory periods. Two credits. Winter, T. 1; Lab. T. Th. 2-5.

121. Bacterial Metabolism. Composition of and transformations due to bacteria. Prerequisites: Bacteriology 1, 2 or 10; Organic Chemistry. Two credits. Fall, M. W. 1.

122. Immunology. A study of immunity. Prerequisites: Bacteriology 1, 2 or 10; Organic Chemistry. Two credits. Spring, M. W. 1.


121. Community Health. A study of the organization and functioning of official and non-official health agencies in the fields of maternal, infant, preschool, school and adult hygiene in the light of modern trends and present social needs. Local health problems, especially rural problems, will be analyzed. Three credits. Spring, M. W. F. 1.

155. School Health. Designed to meet the practical needs in health and health training in the school. It includes methods and materials in health training and instruction. (Meets state certification requirements in health education.) Three credits. M. W. F. 1.

139-299. Administration of the School Health Program. This course is designed for supervisors of school health, deals with the organization and administration of the modern school health program. Three credits. (Not given 1946-47.)

207. Research. The laboratory is especially equipped and library facilities are adequate for advanced students in bacteriological and biochemical investigations in agriculture, household science, the industries, sanitary science and veterinary science. One to five credits. Any quarter. Time arranged

226, 227, 228. Seminar. May be taken by properly prepared undergraduate students by registering for 126, 127, 128. Two credits each quarter. Any quarter. Time arranged.

Botany and Plant Pathology

Administered jointly by the School of Agriculture and the School of Arts and Sciences

B. L. Richards, Professor; F. B. Wann, Associate Professor; Arthur H. Holmgren, W. S. Boyle, Assistant Professors; Robert K. Gerber, Research Assistant; Bassett Maguire, Curator New York Botanical Garden, Non-Resident Professor; H. L. Blood, Collaborator, U.S.D.A.

In addition to course work, the Department of Botany offers special opportunity for research and graduate study in plant taxonomy, plant physiology, plant anatomy, and plant pathology. The research and graduate possibilities in plant pathology are greatly augmented through the cooperation of the United States Department of Agriculture.

See pages 43 and 44 for courses that may satisfy group requirements.

REQUIREMENTS FOR A MAJOR IN BOTANY OR PLANT PATHOLOGY

Bot. 21, 22, 23 General Botany
Bot. 30 Taxonomy
Bot. 116 Plant Micro-Technique
Bot. 117 Plant Anatomy
Bot. 120 Plant Physiology
Bot. 130 Plant Pathology
Bot. 150 Mycology
Bot. 240 Seminar

Botany 21, 22, 23, 30, 120 and 130 or equivalent required for teaching major. Recommended additional courses for the following major fields:
Plant Pathology
Bot. 121 Water Relations
Bot. 131 Field Crop Diseases
Bot. 135 Fruit Crop Diseases

Bot. 140 Forest Pathology
Bot. 104 Tax. Poisonous Pls.
Bot. 151 Mycology

Taxonomy
Bot. 108 Agrostology

Plant Physiology
Bot. 121 Water Relations
Bot. 224 Advanced Physiology

1. Principles of Biology. A fundamental course in the basic life principles illustrated in both plant and animal forms. Special attention will be given to the nature and structure of protoplasm, differentiation in plant and animal cells, adaptation, development and reproduction, heredity and evolution, types and phylogenetic relationships as exhibited in the big groups of plants and animals. For junior college students except those who may elect Botany 21, 22, 23, or Zoology 3 and 4. Five credits. Fall, Section 1, Daily 9.

Staff in Botany


20. Taxonomy of Vascular Plants. A fundamental course dealing with the kinds, relationships, and classifications of the vascular plants chiefly of this region. Prerequisites, Botany 21, 22, 23. Five credits. Spring, T. Th. 9; Lab., M. W. 2-5 or T. Th. 2-5.

30. Taxonomy of Poisonous Plants. Deals with the recognition, distribution, and ecology of poisonous plants, native and introduced, which occur in the intermountain West, with particular emphasis upon those found in Utah. Prerequisite: Botany 30. Two credits. Winter, M. 10; Lab., M. 2-5. Holmgren

104. Taxonomy of Poisonous Plants. A fundamental course dealing with the kinds, relationships, and classifications of the vascular plants chiefly of this region. Prerequisites, Botany 21, 22, 23. Five credits. Spring, T. Th. 9; Lab., M. W. 2-5 or T. Th. 2-5.

105. Taxonomy of Poisonous Plants. Deals with the recognition, distribution, and ecology of poisonous plants, native and imported, which occur in the intermountain West, with particular emphasis upon those found in Utah. Prerequisite: Botany 30. Two credits. Winter, M. 10; Lab., M. 2-5. Holmgren

108. Agrostology. A taxonomic study of native and imported grasses of the western ranges. Special attention given to species playing an important part in grazing and soil binding. Prerequisites, Botany 21, 22, 23, 30. Four credits. Winter, Lect., M. W. 11; Lab., T. Th. 2-5. Holmgren

112. Aquatic and Marsh Plants. A taxonomic and ecological study of aquatic and marsh plants with special emphasis on important food and cover plants for wildlife. Prerequisites: Botany 21, 22, 23, 30. Three credits. Fall, Lect., M. 10; Lab., M. W. 2-5. Holmgren


120. Elementary Plant Physiology. Deals with fundamental principles of absorption, mineral nutrition, food manufacture, metabolism, translocation and growth. Prerequisites, Botany 21, 22, 23, and Chemistry 12 or 121. Five credits. Winter, M. W. F. 9; Lab., T. Th. 8-11.


130. Principles of Plant Pathology. Fundamental principles underlying diseases in plants. The types of diseases and methods of study are such as will give the student a comprehensive view of the subject of Plant Pathology. Prerequisites, Botany 21, 22, 23. Five credits. Fall, Lect. M. W. F. 11; Lab. M. F. 2-5.


135. Vegetable and Fruit Crop Diseases. Diseases of vegetable and fruit crops. Prerequisite, Botany 130. To alternate with Botany 131. Four credits. Winter, Lect., W. F. 11; Lab., M. F. 2-5. (Not given 1946-47.)

140. Forest Pathology. Study of the nature, cause and control of disease affecting forest trees. Factors inducing loss in forest products are also emphasized. Prerequisites, Botany 21, 22 and 23. Four credits. Winter, Lect., W. F. 10; Lab., T. 8-11, Th. 9-12.

150. Mycology. Morphology and taxonomy of the Phycomycetes and Ascomycetes with emphasis on economic forms. Prerequisites, Botany 21, 22, 23. Four credits. Fall. Alternates with Botany 151. Arranged.

151. Mycology. Continuation of Botany 150, dealing with the morphology and taxonomy of the Basidimycetes and Fungi imperfecti. Prerequisites, Botany 21, 22, 23. Four credits. Fall. (Not given 1946-47.)

160, 161, 162. Laboratory Methods. Open to qualified senior and graduate students majoring in Botany. One credit each quarter. Fall, Winter, Spring. Time arranged. Graduate credit may be obtained by registering for 260, 261, 262.

221. Pathological Technique. Special methods as applied to Plant Pathology, Physiology, and related subjects. Students may register for this course only by special permission. Four credits. Time arranged. Winter.

224. Advanced Plant Physiology. Chemical reaction and transformation underlying the vital processes in plants. Prerequisites, Botany 120. Three credits. Spring, M. W. F. 11.

234, 235, 236. Special Problems. Open to qualified students majoring in Anatomy, Taxonomy, Plant Physiology, or Plant Pathology. Fall, Winter, Spring. Two to four credits. Time arranged.


250. Research. Open to all qualified college students in Botany and Plant Pathology. Any quarter. Time and credit arranged.

Plant Ecology. (See Range Management 126.)

Dairy Husbandry and Manufacturing

G. B. Caine, A. J. Morris, Professors; G. Q. Bateman, Associate Professor; Lyman Rich, Assistant Professor; J. E. Packer, Research Assistant. Lyman Rich, Extension Dairyman.

Students majoring in Dairy Husbandry must complete the following major courses for graduation: Dairy 1, 5, and 6; An. Hus. 10, 150, 155, and all other courses listed in Dairy Production. Chem. 107 and Bact. 104 are also required.
A suggested course is set up for students majoring in Dairy Manufacturing. Students should study this course carefully and adhere to it as closely as possible. It is expected that students spend at least six months in a commercial dairy manufacturing establishment before graduation. It is strongly recommended that more than six months be spent in dairies if possible. This can usually be arranged by procuring summer work through the department.

Cooperation exists between the department and commercial dairies, and special trips are made to them during this course.

There is a good demand in the technical field of dairying for students who have had advanced training.

An opportunity is offered to do graduate work with an application in the field of chemistry, biochemistry, genetics, bacteriology or economics.

1. General Dairy Husbandry. Designed for students who desire a short general course in Dairy Husbandry. Taught for the students majoring in Dairy Husbandry as well as any student in the School of Agriculture. The following topics will be considered: History and present status of the dairy industry; caring dairy herds; breeds of dairy cattle; cow testing associations; club work; study of herd records; calf feeding; general principles of feeding management and housing of dairy cattle. Lab., Judging dairy cattle. Three credits. Fall, Winter, Spring, T. Th. 9; Lab., Th. 2-5.

2. Principles of Dairy Industry. A general course introductory to all courses in Dairy Manufacturing and adapted to students taking general agricultural work. It includes the history and development of the dairy industry with definite study of the secretion of milk, the use and operation of Babcock tests; and a brief study of butter, cheese, ice cream, and of dairy arithmetic. Three credits. Winter, T. Th. 10; Lab., W. 2-5.

3. Principles of Dairy Industry. A general course introductory to all courses in Dairy Manufacturing and adapted to students taking general agricultural work. It includes the history and development of the dairy industry with definite study of the secretion of milk, the use and operation of Babcock tests; and a brief study of butter, cheese, ice cream, and of dairy arithmetic. Three credits. Winter, T. Th. 10; Lab., W. 2-5.


5. Market Milk. Modern, sanitary methods of producing, processing, and marketing milk, cream, and related products for city supply. Three credits. Fall, T. Th. 8; Lab., T. 2-5.

6. Dairy Practice. A course for special or short course students only. Practice in plant manufacture will be emphasized. Any quarter. Time and credit arranged.

7. Breeds of Dairy Cattle. Study of history and development of all breeds of dairy cattle; special emphasis on the various families within the breeds; requirements for official testing; pedigree and herd book study. Four credits. Fall, M. W. F. 9; Lab., 2-5.


103. Manufacture of Cheese. A study of the factors involved in the manufacture of cheese of the cheddar and other types. Classification, statistics, curing, marketing, and factory organization will also be studied. Five credits. Fall, M. W. F. 10; Lab., F. 11-5.

105, 106, 107. Management and Operation of Dairy Manufacturing Plants. Personnel problems, advertising, selling, managerial use of records, and other principles underlying successful management and operation are considered.
All operations of the creamery are conducted by this class. Application for admittance must be made in writing. Two credits each quarter. W. 1; Lab. arranged.


Caine and Ritz


Lab., T. 2-5. 

Caine and Bateman


Caine

115. Seminar. Discussion and reports of current literature. Any quarter. Time and credit arranged. 

150. Special Problems in Dairy Production. Any quarter. Time and credit arranged. 

154. Special Problems in Dairy Manufacturing. Any quarter. Time and credit arranged. 


217. Research in Dairy Manufacturing. Any quarter. Time and credit arranged. (Twelve credits, maximum.) 

254. Special Problems in Dairy Manufacturing. Any quarter. Time and credit arranged. 

Horticulture

F. M. Coe, E. M. Anderson, Associate Professors; J. B. Brown, Research Assistant.

The instructional work in horticulture provides not only for the needs of the student who wishes to specialize in this field of service, but offers general introductory and service courses to students specializing in other fields of agriculture. Theoretical instruction in horticultural science is accompanied by practical work with the actual trees, fruits, vines, and plants. Practice in identification of varieties, pruning, grafting, budding and other methods of propagation, spraying, planting, pollination and hybridizing of fruit plants, grading and packing of fruits is given in laboratory exercises which are carried out in greenhouses, nurseries, gardens, packing houses, vineyards, berry plantations and orchards of the College and Experiment Station as well as in laboratories. Campus facilities are supplemented by field trips to private orchards, nurseries and berry farms in central and northern Utah.

All courses in horticulture are open to veterans to prepare them for opportunities in fruit growing, nursery work and related fields, and special attention will be given to their needs. If 10 or more such students apply, special vocational courses covering the practical and commercial phases of fruit growing will be given.

Students specializing in horticulture may elect to major in general horticulture or in the more specialized field of pomology. Basic training in botany, plant pathology, chemistry, physics, entomology, soils, irrigation, agricultural
economics, genetics, English and speech should precede or accompany course work for a major or minor in horticulture. Students should elect advanced work in soils, plant breeding, botany, and entomology.

Professional courses of study with a major in horticulture may be followed, leading to commercial fruit growing and marketing, Smith-Hughes teaching, agricultural inspection, and extension work. An approved scientific course is also offered. Leading to graduate study in preparation for technical research and collegiate instruction.

For a major in horticulture, the following courses are required: Hort. 1, 6, 8, 101, 102, 107, 110, 112, 151, 152, 154, 156; Vegetable Crops 1, 105; Landscape Architecture 3. Supporting courses recommended are: Ent. 108, 109; Zool. 12; Botany 23, 30, 120, 130, 135; Agron. 56, 107, 109, 115; Ag. Econ. 62, 113, 114; A. E. 10, 14a, 15a, 106, 116.

1. Tree Fruit Production. Outlook, selection of locations and varieties, rootstocks, propagation of fruit plants, establishing orchards, pruning and training, soil management, thinning, pollination, pest control, harvesting, grading and packing. Four credits. Fall and Spring, M. W. F. 11; Lab. M. 2-5. Coe

2. Plant Propagation. The fundamental principles underlying the propagation of plants: seedage, graftage, cutting, layerage, separation, and division. Practice is taught in laboratory exercises in the greenhouse and nursery. Designed for anyone interested in plant science or plants as a hobby. Three credits. Spring, M. W. 1; Lab., F. 2-5. Staff

3. Small Fruit Production. Commercial and home culture of strawberries, blackberries, dewberries, raspberries, gooseberries, currants, and grapes, including (a) location; (b) soil management; (c) botany, varieties, classification; (d) propagation, planting, and culture; (e) pruning and training; (f) harvesting and marketing. Three credits. Winter. Time arranged. Coe

101, 102. Advanced Pomology. A two-term course covering the fundamental principles and practices of orcharding as developed by research in horticultural science. Course 101 includes geography of fruit production, climatic factors, temperature relations, propagation, rootstocks, and water relations; course 102 covers nutrition, pruning and training, fruit setting, thinning, soil management. The practical application of fundamental principles is considered. Courses 110, 111, 112 (Orchard Practice) are laboratories for these courses, and should accompany them. Prerequisites: Botany 23; Chem. 12 or 121; Agronomy 6. Alternates with 151. Three credits each quarter. Fall and Winter. Time arranged. Staff

107. Spraying. Fungicides and insecticides used in the control of insects and diseases; preparation, properties, and use in spraying; spray machinery and equipment, dusts, and dusting; spray schedules, economics of spraying; fumigation; design, care and operation of spray equipment. Prerequisites: Chem. 4 or 11; Botany 130 (Plant Pathology); and Zoology 108 (Ag. Entomology). Three credits. Winter. Time arranged. Staff

110, 111, 112. Orchard Practice. Laboratory course to accompany 101, 102, 152. Advanced field work in seasonal orchard operations. Fall quarter includes picking, grading, packing and storage of fruits, exhibiting and judging, and field trips to orchards, packing plants and storages. Winter quarter includes practice in bench grafting, seed sterilization, stratification, handling seedlings, pruning, training, grafting, orchard planning, spraying and packing house machinery care and adjustment. Spring operations are pruning, renovation, grafting, planting, pollination, hybridizing, spraying, cultivation, irrigation, and thinning. Prerequisite, Hort. 1. One credit each quarter. Time arranged. Staff

151. Systematic Pomology. Study of varieties of fruits, origin, classification, identification, judging, adaptation, important pomological groups and their relationships. Prerequisite, Hort. 1. Alternates with 101. Four credits. Fall. (Not given 1946-47.) Coe

152. Commercial Pomology. Problems in handling and marketing of fruits; maturity indexes, picking, grading, packing, transportation, storage, distribu-
tion, buildings, equipment, roadside and local marketing. Hort. 110 should precede this course. Prerequisite, Hort. 1. Alternates with 102. Three credits. Winter. (Not given 1946-47.)

153, 154, 155. Seminar. Oral and written reports on research work and original papers on pomological problems such as fruit breeding, storage, fruitfulness, pollination, water relations, hardiness, etc. One credit each quarter. Fall, Winter, and Spring. Time arranged.

156. Special Problems. Advanced problems in pomology for qualified seniors or graduate students. Assigned readings and research work in library, laboratory, greenhouse or field, presented as term papers. Registration by permission only. Any quarter. One to three hours' credit. Time and credit arranged.

201, 202, 203, 204-A, 204-B. Research. Original research on pomological problems for graduate students taking a major or minor in horticulture. Registration by permission only. Three to ten credits. Course 201, Fall Quarter; 202, Winter quarter; 203, Spring quarter; 204-A and 204-B, Summer session and Intersession, respectively.

**Landscape Architecture**

Administered jointly by the School of Agriculture and the School of Arts and Sciences

L. S. Morris, Associate Professor.

Landscape architecture is the art of PLANNING land for use. The use to which land is put varies from the routine functions of a community or region to the individual home which seeks for better living.

Professional practice in landscape architecture is concerned with the design of land areas for special purposes, and construction necessary to the design. Plants are among the important materials of the landscape architect, but plants alone do not make a plan. The prospective landscape architect should therefore prepare himself in design, construction, planting and maintenance of such land areas as home grounds, parks and parkways, subdivisions, cemeteries, air-ports, recreational facilities, towns and cities, and other public areas.

Students who wish to train as park custodians, or go into nursery practice or allied fields should consult the head of the department.

Students from other departments wishing an appreciation or general knowledge of landscape architecture may register for Landscape Architecture 3, 20, or 130.

### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Algebra, Math. 34, 35</td>
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<tr>
<td>Trigonometry, Math. 46</td>
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<tr>
<td>General Botany, Botany 21, 22</td>
<td>6</td>
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<tr>
<td>Inorganic Chemistry</td>
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<tr>
<td>Chemistry 1 or 10</td>
<td>5</td>
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<tr>
<td>Mechanics of Writing, English 2</td>
<td>3</td>
</tr>
<tr>
<td>Elementary Design and Form Study, Art 1</td>
<td>3</td>
</tr>
<tr>
<td>Elements of Landscape Architecture, L. A. 3</td>
<td>2</td>
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<tr>
<td>Drawing, L. A. 20</td>
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<tr>
<td>Hist. and Lit. Landscape Architecture, L. A. 30</td>
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<tr>
<td>Electives</td>
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### Sophomore Year

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<td>Physics 20</td>
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<tr>
<td>Plane Surveying</td>
<td>8</td>
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<tr>
<td>Civil Engineering 81, 83</td>
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<td>Mapping and Office Practice</td>
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<tr>
<td>Civil Engineering 82</td>
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<td>Sophomore Composition</td>
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<tr>
<td>English 10</td>
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<tr>
<td>Sociology 70</td>
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<tr>
<td>Plant Propagation</td>
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<tr>
<td>Horticulture 6</td>
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<td>L. A. 10, 11</td>
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<td>L. A. 60, 61, 62</td>
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<td>Art 104</td>
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### Junior Year

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<td>Advanced Composition</td>
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<tr>
<td>English 110</td>
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<tr>
<td>Economics 51</td>
<td>5</td>
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<tr>
<td>Principles of Genetics</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 112</td>
<td>5</td>
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<tr>
<td>Geology 3</td>
<td>5</td>
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<tr>
<td>Soils, Agronomy 56</td>
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<tr>
<td>Land Planning: L. A. 140, 141, 142</td>
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<tr>
<td>Landscape Construction: L. A. 160, 161, 162</td>
<td>9</td>
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<tr>
<td>Fundamentals of Speech</td>
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<tr>
<td>Creative Expression, Art 104</td>
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<tr>
<td>Planting Design, L. A. 150</td>
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### Senior Year

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<thead>
<tr>
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<tbody>
<tr>
<td>The Writing of Feature Articles</td>
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<td>Journalism 112</td>
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<td>Organic Evolution</td>
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<tr>
<td>Zoology 131</td>
<td>3</td>
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<tr>
<td>Population Problems</td>
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<td>Sociology 154</td>
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<tr>
<td>Playground and Community</td>
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<td>Physical Education 83</td>
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<tr>
<td>Advanced Land Planning: L. A. 180, 181, 182</td>
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<tr>
<td>Building Construction</td>
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<td>Wood Work 161</td>
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</tr>
<tr>
<td>Electives</td>
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</table>

3. **Elements of Landscape Architecture.** Principles of design and composition as applied to various types of land planning. The design of home grounds is emphasized. Arranged for women as well as men and is of particular value to those wanting a general knowledge of landscape architecture. A field trip required. Two or three credits. (Students majoring in landscape architecture should not take the lab.) Fall and Spring. Lecture T. Th. 3; Lab., T. 2-5.

10. **Plant Materials.** Classification, identification, ecological requirements and uses of both woody and herbaceous plants for landscape purposes. Both native and introduced plants studied. Three credits each quarter. Fall and Spring. Lecture, T. Th. 9; Lab., T. 2-5.

20. **Drawing.** A general course in drawing to acquaint the student with the use of instruments. Necessary to all courses in design. Lettering, general drafting, perspective drawing, light and shade studied. Three credits. Any quarter. M. W. F. 2-5.

30. **History and Literature of Landscape Architecture.** The history of landscape architecture from antiquity to the present time, its relation to architecture and other allied arts. Characteristics of landscape styles in the various countries studied. Five credits. Winter, Daily 9.

60, 61, 62. **Architectural Design.** The design of such architectural features as used in the garden and landscape; pergolas, arbors, fences, retaining walls, steps, garden houses. Criticism given by practicing architects. Two credits each quarter. Fall, Winter, and Spring, T. Th. 2-5.

130. **Recreational Planning.** Public and private recreation in relation to design, construction and operation. National and state parks and forests studied as they pertain to recreation. Field trip required. Two credits. Spring, T. Th. 9.

140, 141, 142. **Landscape Design.** The design of private and public properties based on the principles of utility and composition. Prerequisites, Landscape Architecture 3 and 20. Two credits. Fall, Winter, and Spring, T. Th. 2-5.

150, 151, 152. **Planting Design.** Pictorial compositions and planting plans developed together. This course is designed to develop the student's ability to visualize the finished landscape. Two credits each quarter. Fall, Winter, and Spring, T. Th. 2-5.
160, 161, 162. Landscape Construction. Grading, drainage, sprinkling systems, landscape structures, cost estimates. Three credits each quarter. Fall, Winter and Spring, M. W. F. 2-5.  
170. Civic Planning. City and community planning in relation to setting, population trends, traffic design, recreation, zoning, and other facilities which make for organic functionalism. Two credits. Autumn T. Th. 10.  
180, 181, 182. Advanced Land Planning. The design of home grounds, estates, public grounds, parks, cemeteries, building groups, and recreational areas on various types of topography. Three credits each quarter. Winter and Spring, M. W. F. 2-5.  
190. Special Problems. Selected problems to meet the needs of individual students for completion of training. Registration by permission only. Any quarter. Time and credit arranged.  

Poultry Husbandry  
BYRON ALDER, Professor; CARL FRISCHKNECHT, C. I. DRAPER, Associate Professors.  

1. General Poultry. A study of breeds, judging, incubation, brooding, feeding, marketing, designed to meet the needs of the students wishing a general knowledge of the poultry industry and the problems of production, and a foundation upon which other courses are built. Three credits. Fall or Winter, M. W. F. 11.  
2. General Poultry Laboratory. Covers the same work as Poultry 1, with practical laboratory problems. One credit. Fall or Winter, T. 2-5.  
8. Turkey Production. A study of the breeds, breeding, brooding, feeding, and marketing of turkeys. Special problems involved in small farm flock or large commercial flock management are emphasized. Three credits. Winter, M. W. F. 9.  
104. Incubation and Brooding. This course is designed to familiarize the student with the special problems involved in incubation or hatchery operation and the brooding, feeding, and rearing of chicks. The advantages and disadvantages of battery, hot water, electric, coal burning, and gas brooders are emphasized. Two credits. Spring, T. Th. 9.  
105. Poultry Management. Problems of location of poultry farm, farm planning, renewing the flock, feeding, disease control, marketing, and other problems affecting labor income are studied in detail. Prerequisite, Poultry 1. Three credits. Spring, M. W. F. 8.  
106. Breeds and Breeding. A study of the origin and development of the breeds and varieties of poultry and their adaptability to intermountain conditions; production of hatching eggs for commercial hatcheries; R. O. P. Breeding, and the National Poultry Improvement Plan; and important inheritance problems in poultry. Prerequisites: Poultry 1 or 101, and An. Hus. 15, or Zoo. 12. Three credits. Spring, M. W. F. 8. Poultry 105 and 106 given alternate years. (Not given 1946-47.)

125. Special Problems. Special assignment to work out certain information on special problems. Prerequisites, Poultry 1, 104, and 107. Winter and Spring. Time and credit arranged. Staff

126. Seminar. Current poultry literature studies; assigned problems and special topics. One credit. Winter. Time arranged. Staff

127. Advanced Poultry Practice. Special practice at the poultry yards. Prerequisites, Poultry 1, 104, and 107. Time and credit arranged. Winter and Spring. Alder and Draper

Poultry Diseases. (See Veterinary Science 170.)

201. Seminar. One credit each quarter. Time arranged. Staff

210. Research Problems in Poultry Nutrition. Two to five credits. Time and credit arranged. Staff

212. Research Problems in Poultry Breeding. Two to five credits. Time and credit arranged. Staff

214. Research Problems in Poultry Production. These problems will be in some phase of poultry production other than breeding or nutrition. Two to five credits. Time and credit arranged. Staff

Vegetable Crops

L. H. POLLARD, Associate Professor;
L. R. HAWTHORN, Collaborator in Research, U.S.D.A.

Students majoring in vegetable crops are required to take the following courses: Vegetable Crops 1, 105, 120, 121, 161, 162, 163; Botany 120, 135; Hort. 1, 8; Agron. 6 or 106, 110.

Students who plan to do graduate work may be admitted to a technical course in Vegetable Crops by permission of the Head of the Department and the Agricultural Advisory Council.


105. Major Vegetable Crops. The classification, identification, origin, history, types, and uses of our vegetable crop plants. Special emphasis will be placed on those crops of major importance in Utah. This course alternates with 121. Prerequisite: Veg. Crops 1. Four credits. Fall, M. W. F. 9. Lab., T. Th. 9-12. Pollard

120. Vegetable Improvement. The fundamental principles and practices of plant breeding in the improvement of vegetables. Prerequisite: Agronomy 109. Four credits. Winter, M. W. F. 8; Lab., W. 2-5. Pollard

121. Advanced Vegetable Crops. A consideration of the economic, ecological, and physiological factors underlying vegetable production, based on a study of experimental results. Prerequisites: Veg. Crops 1, 105; Agron. 6 or 106; Bot. 120. This course alternates with 105. Four credits. (Not given 1946-47.) Pollard

160. Special Problems. Problems of production and breeding of vegetable crops. Registration by permission only. One to three credits, any quarter. Time arranged. Staff

161, 162, 163. Seminar. Reports on research work and presentation of original papers. One credit each quarter. Time arranged. Staff
210. Research. Original research on vegetable crop production or breeding problems for graduate students taking a major or minor in vegetable crops. Three to ten credits. Any quarter. Time arranged.

Veterinary Science
WAYNE BINNS, M. L. MINER, Associate Professors; H. M. NIELSEN, Assistant Professor

Courses in Veterinary Science are designed, not for training specialists in this field, but as an essential link to complete the instruction in Animal Husbandry, Dairy Husbandry, and Poultry Husbandry. Animal sanitation and disease control are primarily stressed. Pre-veterinary courses for those wishing later to obtain Veterinary degrees elsewhere, may be conveniently taken at this school.

10. Animal Hygiene. A study of principles and practices necessary to maintain farm animal health. A limited study of the anatomy and physiology of domestic animals to serve as a basis for the study of the nature, cause, and control of disease. The causes, descriptions, control, and prevention of the prevalent infectious diseases. Limited to students with Sophomore standing or above. Four credits. Winter and Spring, M. W. F. 8; Lab. F. 2-5. Binns

140, 141. Comparative Veterinary Physiology. The vital functions of the different species of domestic animals and those of the human body are compared; the physical and chemical laws as related to physiology, the general properties of animal cells, their origin, development, and growth; with special physiology of the various organs and tissues of the animal's body. Two quarters are required to complete the course, of which, the second quarter is a continuation of the material covered during the first quarter's work. Three credits. Fall and Winter, M. W. F. 11. Nielsen


PRE-VETERINARY TRAINING

Students desiring to work toward a degree in Veterinary Medicine (D. V. M.) must have at least one year of pre-veterinary training at some authorized college or university. Most students find it necessary to complete two or more years of college work before they are accepted by a veterinary school. Students majoring in Botany, Zoology, or Pre-medicine as outlined in the catalog will complete all requirements for entrance into a veterinary college. This College does not give a degree in Veterinary Medicine; therefore, after completing his pre-veterinary work here, one must continue his training elsewhere. Students from this College, to be accepted, must have a thorough training with a high scholastic standing in the basic subjects required in the pre-veterinary course. Enrollment in veterinary colleges is limited, and students from the state in which the college is located are given preference; therefore, students from this College must be highly qualified to be accepted. A suggested two-year pre-veterinary course follows:

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<td>Mathematics 34</td>
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<td>Animal Husbandry 1</td>
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<td>Botany 21, 22</td>
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SOPHOMORE YEAR

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ZOOLOGY, ENTOMOLOGY AND PHYSIOLOGY

Administered jointly by the School of Arts and Sciences and the School of Agriculture.

D. M. HAMMOND, G. F. KNOWLTON, C. J. SORENSON, Professors; J. SEDLEY
STANFORD, G. H. KELKER, Associate Professors; CLYDE BIDULPH, Assistant
Professor; WILLIAM SCHOLE, Instructor; HOWARD E. DORST, WALTER E. PEAY,
Collaborators in Research, U.S.D.A.

In addition to course work the Department of Zoology, Entomology and
Physiology offers excellent opportunities for research and graduate study in
various phases of economic entomology, taxonomy and morphology of insects,
and parasitology. Frequently, further training and experience in these fields
may be obtained by participation in Agricultural Experiment Station research
projects.

Requirements for a Major in Agricultural Entomology:

Zoology 3 Invertebrate Zoology 102, 103 Systematic Entomology
4 Vertebrate Zoology 108 Agricultural Entomology
12 Principles of Genetics 115 Medical and Veterinary
106 Zoological Literature Entomology
116 Parasitology 125, 126 Seminar
Entomology 13 General Entomology 156 Chemistry of Insecticides
101 Insect Morphology and Fungicides

See Zoology, Entomology and Physiology, under School of Arts and
Sciences, for course descriptions.
SCHOOL OF ARTS AND SCIENCES

CARLTON CULMSEE, Dean.

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Chemistry ........................................................................ 88
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Speech .............................................................................. 109
Zoology, Entomology and Physiology .................................. 112
General Information

IN ADDITION to training students to carry on their work in the technical divisions of the Institution, the School of Arts and Sciences offers opportunity to all the students of the College to lay the foundation for a liberal education. The need to understand our own culture as well as the cultures of other nations has never in history been so urgent as now. Such understanding is the surest path to permanent peace in the postwar world. Many of the courses in Arts and Sciences qualify the student directly to play his part as an informed citizen in attempts to realize that great hope. The curricula of Arts and Sciences also enable properly qualified students to major in its departments and thus begin preparation for a career.

The School of Arts and Sciences includes the departments of Bacteriology and Public Health, Botany and Plant Pathology, Chemistry, English and Journalism, Geology, History, Landscape Architecture, Mathematics, Modern Languages and Latin, Physics, Speech, Zoology, Entomology and Physiology, and Military Science and Tactics.

PRE-MEDICAL TRAINING

The School of Arts and Sciences offers the necessary courses to provide a pre-medical training which will satisfy the entrance requirements of Medical Schools of the United States and Canada.

SUGGESTED PRE-MEDICAL SCHEDULE

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Lower Division</th>
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<tr>
<td>Math. 34, 35, 46</td>
<td></td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Military Science</td>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Total</strong></td>
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<td>18</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>Lower Division</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 10</td>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Physics 20, 21, 22</td>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 3, 4, 12</td>
<td></td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Psychology 3</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>English 5</td>
<td></td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Military Science</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
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<td></td>
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</tr>
<tr>
<td><strong>Total</strong></td>
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<td>18</td>
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<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Upper Division</th>
<th>F</th>
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</thead>
<tbody>
<tr>
<td>Chem. 121, 122</td>
<td></td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 102, 103</td>
<td></td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Zoology 117*, 118, 119*</td>
<td></td>
<td>5</td>
<td>4</td>
<td>4</td>
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<tr>
<td>English 110</td>
<td></td>
<td>4</td>
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<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>17</td>
<td>17</td>
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</tr>
</tbody>
</table>

*Recommended, but not required.

Pre-medical students interested in graduation from this College before attending medical school may major in Chemistry, Biochemistry, Zoology, or other related fields. For the pre-medical major in Zoology, see introduction to Department of Zoology, Entomology and Physiology.
PRE-DENTAL WORK

Students planning to go into the profession of Dentistry may take the necessary courses in the School of Arts and Sciences to satisfy the requirements for admission to any of the Dental Schools in the United States.

SUGGESTED PRE-DENTAL SCHEDULE

<table>
<thead>
<tr>
<th>Freshman Year (Lower Division)</th>
<th>F</th>
<th>W</th>
<th>S</th>
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<tbody>
<tr>
<td>Chemistry 3, 4, 5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 3, 4</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Mathematics 34</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology 3</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Bacteriology 1, 2</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>English 40</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Military Science 1, 2, 3, or P.E.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Electives (optional)</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>18</td>
<td>18</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year (Lower Division)</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 121, 122</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Physics 21, 22, 23</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 118</td>
<td></td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>English 10, 110</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Political Science 10</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Military Science 4, 5, 6, or P.E.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Electives (optional)</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

Students planning to receive a B.S. degree on a combined curriculum (three years here and one year in a Medical or a Dental school) must fulfill the group and composition and military requirements of this College and must complete a minimum of 141 credits of pre-professional work.

CADET PRE-NURSING TRAINING

Under the Bolton Act, and in cooperation with the Budge Memorial Hospital, the College is offering the fundamental academic courses preparatory to nursing training in the National Cadet Nursing Training program. The academic course covers a period of two quarters and is scheduled as follows:

<table>
<thead>
<tr>
<th>Fall Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a Introductory Chemistry</td>
</tr>
<tr>
<td>1a Microbiology</td>
</tr>
<tr>
<td>40 Sociology for Nurses</td>
</tr>
<tr>
<td>14 Hygiene</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Winter Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>5a Nutrition for Nurses</td>
</tr>
<tr>
<td>3a Psychology for Nurses</td>
</tr>
<tr>
<td>4a Anatomy and Physiology</td>
</tr>
<tr>
<td>10a English</td>
</tr>
</tbody>
</table>

Persons interested in the pre-nursing training program should address inquiries to Dr. D. M. Hammond at the College or to the Superintendent of Nursing Training, Budge Memorial Hospital, Logan.
Bacteriology and Public Health
Administered jointly by the School of Agriculture and the School of Arts and Sciences

J. E. GR!LAVES, Professor Emeritus; W. W. SMITH, Professor; K. R. STEVENS, Associate Professor; L. W. JONES, Assistant Professor.

See pages 43 and 44 for courses that may satisfy group requirements.

Students majoring in the Department of Bacteriology and Public Health should complete Physics 6, 7, or 21, 22; Mathematics 46; Chemistry 12 or 122; Botany 21, 22; Zoology 4; and Bacteriology 1, 2 or 10, 107, 104, 110, 111, 112.

See Bacteriology and Public Health in School of Agriculture for course listing.

Botany and Plant Pathology
Administered Jointly by the School of Agriculture and the School of Arts and Sciences

B. L. RICHARDS, Professor; F. B. WANN, Associate Professor; ARTHUR H. HOLMGREN, W. S. BOYLE, Assistant Professors; ROBERT K. GERBER, Research Assistant; BASSETT MAGUIRE, Curator New York Botanical Garden, Non-Resident Professor; H. L. BLOOD, Collaborator in Research, U.S.D.A.

In addition to course work, the Department of Botany offers special opportunity for research in plant taxonomy, plant physiology, plant anatomy, and plant pathology. The research and graduate possibilities in plant pathology are greatly augmented through the cooperation of the United States Department of Agriculture.

See pages 43 and 44 for courses that may satisfy group requirements.

REQUIREMENTS FOR A MAJOR IN BOTANY OR PLANT PATHOLOGY

<table>
<thead>
<tr>
<th>Botany Courses</th>
<th>Plant Pathology Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bot. 21, 22, 23 General Botany</td>
<td>Bot. 120 Plant Physiology</td>
</tr>
<tr>
<td>Bot. 30 Taxonomy</td>
<td>Bot. 130 Plant Pathology</td>
</tr>
<tr>
<td>Bot. 116 Plant Micro-Technique</td>
<td>Bot. 150 Mycology</td>
</tr>
<tr>
<td>Bot. 117 Plant Anatomy</td>
<td>Bot. 240 Seminar</td>
</tr>
<tr>
<td>Botany 21, 22, 23, 30, 120 and 130</td>
<td></td>
</tr>
<tr>
<td>or equivalent required for teaching</td>
<td></td>
</tr>
<tr>
<td>major</td>
<td></td>
</tr>
</tbody>
</table>

Recommended additional courses for the following major fields:

Plant Physiology

<table>
<thead>
<tr>
<th>Plant Physiology Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bot. 121 Water Relations</td>
</tr>
<tr>
<td>Bot. 131 Field Crop Diseases</td>
</tr>
<tr>
<td>Bot. 135 Fruit Crop Diseases</td>
</tr>
<tr>
<td>Bot. 140 Forest Pathology</td>
</tr>
<tr>
<td>Bot. 151 Mycology</td>
</tr>
<tr>
<td>Bot. 121 Water Relations</td>
</tr>
<tr>
<td>Bot. 224 Advanced Physiology</td>
</tr>
</tbody>
</table>

See Botany and Plant Pathology in School of Agriculture for course listings.

Chemistry

R. L. HILL, SHERWIN MAESER*, DELBERT GREENWOOD, Professors; BRUCE V. WEIDNER, Associate Professor; THEODORE M. BURTON, HARRIS O. VANORDEN, Assistant Professors.

The degree of Bachelor of Science in Chemistry is a professional degree and graduates must meet the minimum requirements of the American Chemical Society in addition to fulfilling the group requirements of the College as given on pages 43-44 of this catalog. To aid the student in registering the following suggested schedule is given.

*On leave.
SCHOOL OF ARTS AND SCIENCES

Suggested Schedule

Freshmen

A. For students having completed 1½ units of high school algebra and ½ unit of geometry:

<table>
<thead>
<tr>
<th>Course</th>
<th>F.</th>
<th>W.</th>
<th>S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 3, 4, 5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math. 35, 46, 97</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Group requirements in biological and/or social science</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Physical Education or Military Science and Tactics</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

B. For students who enter college with credit for only 1 unit of algebra and ½ unit of geometry:

<table>
<thead>
<tr>
<th>Course</th>
<th>F.</th>
<th>W.</th>
<th>S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 3, 4, 5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math. 34, 35, 46</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Group requirements in biological and/or social science</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Eng. 10 or 11 (special petition must be made to take this course in freshman year)</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Physical Education or Military Science and Tactics</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>16</td>
<td>16</td>
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</tbody>
</table>

Sophomores

A. For students with mathematics:

<table>
<thead>
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<th>Course</th>
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<th>W.</th>
<th>S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math. 98, 99</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>English 10 or 11</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Physics 20, 21, 22</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>German</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Physical Education or Military Science and Tactics</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>18</td>
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</tbody>
</table>

Note: Five credits junior college group requirements must be completed in junior year.

B. For students with incomplete mathematics:

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>Math. 97, 98, 99</td>
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<td>5</td>
<td>5</td>
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<tr>
<td>Physics 20, 21, 22</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>German</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Physical Education or Military Science and Tactics</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td></td>
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</table>

Note: Ten credits junior college group requirements must be completed in junior year.

Juniors

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Chem. 101, 102, 103</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Chem. 121, 122, 123</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Jr. college group requirements</td>
<td>5</td>
<td>(5)</td>
<td>5</td>
</tr>
<tr>
<td>Electives in geology, biology, social science, English lit., readings in German</td>
<td>5</td>
<td>10(5)</td>
<td>10</td>
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<tr>
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</tbody>
</table>

Seniors

<table>
<thead>
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<th>Course</th>
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<th>S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 104, 105, 106</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 109, 110, 111</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Chemistry 135</td>
<td>3</td>
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<tr>
<td>Chemistry 160</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>English 111</td>
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<td>4</td>
<td></td>
</tr>
<tr>
<td>Physics 120, 121, 130</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives (must include at least 8 credits adv. chem.)</td>
<td>6</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>16</td>
<td>15</td>
</tr>
</tbody>
</table>
1. Introductory Chemistry. An informational course in beginning college chemistry designed to give students a broad view of the cultural aspects of the science of chemistry. This is a terminal survey course and cannot be used as a prerequisite for advanced courses in chemistry. Five credits. Fall. Lectures, daily 11. Staff

1a. Applied Chemistry. A survey course designed for nurses. Three lectures and two laboratory periods per week. Five credits. Quarter and time to be arranged. Greenwood

3, 4, 5. Chemical Principles and Qualitative Analysis. An introduction to chemical theory and the principles of chemistry including introductory qualitative analysis in the spring quarter. Prerequisites: high school chemistry or physics, algebra and geometry. This course is designed for science majors, pre-medical and pre-dental students and home economics majors in foods and nutrition. Three lectures and two labs. Five credits each quarter. Fall, Winter and Spring. Lec. Sec. 1, M.W.F. 8; Lab. Sec. 1, T. Th. 2-5; Lab. Sec. 2, M. W. 2-5; Lec. Sec. 2, M. W. F. 11. Van Orden

10, 11, 12. General Chemistry. An introduction to the fundamental principles of inorganic and organic chemistry. A one-year terminal course open to any matriculated student. Students with a grade of B or better, may enter Chemistry 5 in the spring quarter. Five credits each quarter. Three lectures and two labs. Fall, Winter and Spring. Lectures, Sec. 1, M.W.F. 8; Sec. 2, M.W.F. 10. Lab. 1, M. W. 2-5; Sec. 2, T. Th. 2-5; Sec. 3, T. Th. 8-11 or 9-12. Hill

Note: Sec. 3 of Chem. 10 will be given in Winter, M.W.F. 9; Lab., M. W. or T.Th. 2-5. Chem. 11, Sec. 3, Spring, M.W.F. 9; Lab., M. W. or T. Th. 2-5. Staff

101, 102. Quantitative Analysis. A course in the theory and practice of gravimetric and volumetric analysis. Prerequisite: Chemistry 5. The course is so designed that it presents a terminal course for majors in agriculture, home economics and pre-medical and pre-dental students. One lecture and three labs. Three credits each quarter. Fall and Winter. Lectures, T. 1. Lab., Sec. 1, M. W. F. 2-5; Sec. 2, T. Th. F. 2-5. Staff


104, 105, 106. Physical Chemistry. Including atomic, kinetic, and electron theories, gaseous, liquid and solid state; solutions and thermodynamics. Prerequisites, Physics 20, 21, 22; Chemistry 5; Mathematics 98. Three credits each quarter. Fall, Winter, and Spring. Time arranged. Staff

107, 108. Dairy Chemistry. The chemistry of milk and milk products, including tests for adulterants, preservatives, and the routine quantitative methods of the analysis of dairy products. Prerequisites, Chemistry 12 or 122. Winter and Spring quarter, 2 Lect. and 2 Labs. each quarter. Four credits each quarter. Lect., T. Th. 9; Lab., W. F. 2-5. Hill

109, 110, 111. Physical Chemistry Laboratory. To accompany Chemistry 104, 105, and 106. One credit each quarter. Fall, Winter, and Spring. F. 2-5. Staff

116. Inorganic Preparations. A laboratory course in practical laboratory methods of synthesis inorganic chemistry. Prerequisites, Chemistry 5 and 103. Any quarter. Time and credit arranged. Staff

120 or 220. Special Courses in Quantitative Analysis. Advanced courses in the analysis of water, food, soil, urine, gas and carbonate and silicate rocks. Prerequisite: Chemistry 9. Winter or Spring. Time and credit arranged. Staff

121, 122. Organic Chemistry. An introductory course in the fundamentals of the chemistry of the carbon compounds. Prerequisites: Chemistry 5 or a grade of B or better in Chemistry 12. Five credits each quarter. Fall and Winter. Three lectures and two labs. Lectures, M. W. F. 11, Lab., Sec. 1, M. W. 2-5; Sec. 2, T. 2-5. Burton

124 or 224. Organic Preparations. An advanced laboratory course in the synthesis of more complex organic compounds. Prerequisite, Chemistry 123. Any quarter. Time and credit to a maximum of three hours to be arranged. 

Burton

125, 126, 127 or 225, 226, 227. Advanced Organic Chemistry. An advanced course designed for senior and graduate students including modern theories and special topics in organic chemistry. Prerequisites: Chemistry 123 and 106. Two credits each quarter. Fall, Winter and Spring. Lecture, T. Th. 11. 

Burton

132 or 232. Colloidal Chemistry. A course in the chemistry of colloids and their relationship to the vital processes in plant and animal life. Prerequisite, Chemistry 122. A background in Physical Chemistry is desirable. Three credits. Time arranged. 

Staff

133 or 233. Colloidal Chemistry Laboratory to accompany course 132. Time and credit arranged. 

Staff

134 or 234. Qualitative Organic Analysis. A study of the classification reactions and laboratory work involved in the identification of unknown organic compounds. Prerequisites: Chemistry 103 and 123. Three credits. Spring. One lecture and three labs. Lectures, M. 1. Lab., time to be arranged. 

Burton

135. Chemical Literature. A study of the types of information available in technical publications; exercises in finding, assembling and using such information. Three credits. Any quarter. One lecture and two three-hour laboratory periods in the library. Time to be arranged. (This course should precede or accompany English 111.) 

Staff


Staff

150 or 250. Advanced Inorganic Chemistry. A study based on the periodic Table and atomic structure. A course designed for Chemistry seniors and graduates and others with similar training. Given on alternate years. Three credits. Winter, M. W. F. 9. 

Staff

155. Glass Blowing. A laboratory course in the technique of manufacture and repair of laboratory glassware. This course is designed for chemistry majors. Others admitted only by special permission. Any quarter. One credit. 

Staff

156 or 256. Chemistry of Insecticides and Fungicides. Designed especially for advanced students in entomology, plant pathology, and agriculture; deals with the chemical composition, stability, toxicity, and effectiveness of commercial insecticides and fungicides. Prerequisite: Chemistry 12 or 122. Two credits. Winter, T. Th. 10. 

Hull


Staff

170-270. Chemical Microscopy. Undergraduate and graduate. Lecture and laboratory practice. Microscopes and their accessories, as applied to problems in chemistry. Practice in the examination and analysis of inorganic substances containing the more common elements, with special reference to rapid qualitative methods and to the analysis of minute amounts of material. Prerequisite, Physical Chemistry or special permission. Any quarter. Credit and time arranged. 

Staff


Staff

180 or 280. Research. Senior or graduate students majoring in chemistry may elect research in any branch of the subject. Any quarter. Time and credit arranged. 

Staff
English

N. Alvin Pedersen*, Alma N. Sorensen, Professors Emeritus;
Wallace J. Vickers, King Hendricks, Carlton Culumsee, Professors;
Ray B. West, Jr., Ira N. Hayward, Associate Professors; Moyle Q. Rice,
Alice Senior*, Assistant Professors.

See pages 43 and 44 for courses that may satisfy group requirements.

English Major Requirements

Students who intend to major in English must complete English 1, 10, 53,
60, and 61 before beginning work on the required upper-division courses. It is
highly desirable to complete History 34 and at least one year of a foreign
language during the freshman and sophomore years.

English 105, 118, 119, 162, 163, 196, 197, 198, two period courses (161, 175,
180, 190, 191), one additional literature course numbered above 120, and at least
24 credits of a foreign language are required of majors in English. Of these 24
credits, 18 may be used as a minor. English 123, The Teaching of English is
recommended for English majors and teaching majors in English. Students
must also maintain a "B" grade average in their major subjects. Teaching
majors in English meet the same requirements except foreign language.

Students whose major interests are divided between English and Speech
take a composite English-Speech major. Such a major relieves the student
of all requirements for a minor. English-Speech majors should take English
1, 63, 118, 119, 163, 180, 190, 191; Journalism 12 (three credits) and 112;
Speech 150 (10 credits), 175, 10 hours of Interpretation, including 124, and 10
credits of Public Speaking, including either 25 or 109.

A. Drill in Essentials of English. This course is intended to assist students
with English deficiencies to qualify themselves for more successful work in
college composition. Students whose standings in the Freshman Placement
Examination show the need of such assistance are assigned to one of the
Spring, M. W. F. 11.


2. Mechanics of Writing. A drill course in the fundamentals of sentence
structure, word usage, punctuation, and spelling, with emphasis on correct
sentence and grammar as aids to precision in writing. Three credits. Fall, M. W.

5. Scientific Vocabulary. A study of word formation and derivation as a
means of understanding scientific terms and of acquiring a vocabulary. Three
credits. Fall or Spring, M. W. F. 11. Hendricks

10. Sophomore Composition. Required of all students not offering its
equivalent. May not be taken in the Freshman year. This course will stress
correctness and effectiveness in sentence, paragraph and theme; give practice
in organization and outlining of material, and in expository writings; demand
clear, forcible expression, and require a full third of a student's time.

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11. **Sophomore Composition.** Should be taken in place of English 10 by sophomore students whose record in the placement test indicates special aptitude in composition. Open only to students whose placement cards are marked "Eligible for English 11." Five credits. Fall, Daily 10. Winter, Daily 8. 2 classes.

17, 18, 19. **Freshman English.** For Forestry, Trades and Industries and Engineering students only. Drill in fundamentals of sentence and paragraph structure. Exercises in grammar, vocabulary, and spelling. Composition, with stress on intelligent thinking and clear expression. Practice in writing letters and reports. Three credits per quarter. Fall, Winter, and Spring, M. W. F.

Rice, Sorensen and Staff

### No. Sec. Quarter Time Instructor
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17 2 Fall 8 Staff
17 3 Fall 9 Rice
17 4 Fall 9 Sorensen
17 5 Fall 11 Staff
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21. **Introduction to Poetry.** This course aims at an appreciative reading of poetry based on critical standards, to be reached through an understanding of the form of poetry; through a sense of the universal emotions which inspire it and give rise to traditional types; through a perception of what the personality of the poet and the spirit of his time contribute, and finally, through insight into the beauty and intense vitality which are communicated through the combination of these forms, feelings, attitudes, and ideas. Five credits. Spring, Daily 8.

22. **Contemporary Poetry.** A study of the principal British and American poets since 1900. The purpose of the course is to help students to enjoy and understand poetry as a living art. Three credits. Winter, M.W.F. 9. West

24. **Children's Literature.** Introduction to the prose and poetry of childhood and adolescence. A $1.50 library fee is required. This course is helpful to teachers and parents. Four credits. Fall, Winter and Spring, M. T. W. Th. 2.

Rice

25. **The Nineteenth Century Novel.** Analysis of the novels of Scott, Austen, Thackeray, Cooper, and Hawthorne. Three credits. Fall, M. W. F. 11. Staff


27. **The Nineteenth Century Novel.** Analysis of the novels of Hardy, Meredith, Howells, James, Turgenev. Three credits. Spring, M. W. F. 9. Staff

31. **Floating Poetry.** A study of the poetry that has lived in the oral tradition since medieval times. The course is divided into four parts; the narrative
ballad, the non-narrative poem, Negro poetry (including slave songs and spirituals), and children's poetry. Three credits. Spring, M. W. F. 2. Hendricks

33. Short Story. A study of the technique of the short story. English, American, and European stories will be analyzed. Encouragement will be given to those who wish to write. Three credits. Fall, M. W. F. 8. Spring, M. W. F. 11. Rice


40. World Literature. A survey course including a study of epic and romance, tragedy, comedy, satire, etc., as these forms have appeared in Greek, Roman, Hebrew, Italian, French, German, English and American literature. Five credits. Fall or Winter, Daily 10. Sorensen

46. The Bible as English Literature. The course provides an opportunity for first hand acquaintance with the great book of books. Five credits. Spring, Daily 9. Vickers

47. Survey of World Drama (Early Period). A study of selected plays of Aeschylus, Sophocles, Euripides, Aristophanes, Menander, Plautus, Terence, and Seneca; also of the medieval liturgical drama. Attention will be paid to social conditions, philosophy, and political history of the times. This is the first in a series of three courses covering the drama from Greek beginnings to the present. Five credits. Fall, Daily 10. Vickers

48. Survey of World Drama (Middle Period). A continuation of 47. A study will be made of selected plays from the English dramatists of the sixteenth century, exclusive of Shakespeare; of the Stuart period, the Restoration, the eighteenth century, and of the early poetical dramatists of the nineteenth century. Included also will be the works of such continental dramatists as Lope de Vega, Calderon, Corneille, Racine, Moliere, Lessing, Schiller, Goethe, and others. Five credits. Winter, Daily 9. Staff


52. American Literature. General survey of American prose and poetry from the Colonial period to the present. Five credits. Spring, Daily 8. Hayward

53. American Literature. A survey of American literature from the beginnings to the present, with special emphasis on the works of those authors whose writings express the democratic spirit or in other ways portray ideas characteristic of American culture. Open to English majors or minors and to majors and minors in other departments by permission of the instructor. Five credits. Fall, Daily 9. Hayward

54. American Biography and Autobiography. Aimed to introduce American biography and autobiography both as an enjoyable and important form of literature, and as a source of valuable sidelights on American thought and culture. Two credits. Fall, T. Th. 8. Hayward


56. American Drama. A study of the development of American drama from Revolutionary times to the present. The principal American plays are studied in the light of the literary and social theories of the times in which they were written. Three credits. Hayward

59. Emerson. Selected essays, speeches, poems. Two credits. Sorensen

*Vickers*


*Sorensen*

63. **Shakespeare.** The course offers the opportunity to gain a general knowledge of Shakespeare by reading a liberal number of his plays and participating in class discussions upon them. Three credits. Fall, M. W. F. 9. 

*Vickers*

85. **Shelley.** A study of his relation to the Romantic movement. Two credits. 

*Sorensen*

88. **Browning.** Chiefly a study of his monologues and selected dramas. Two credits. 

*Sorensen*

95. **Contemporary Novels.** A course in the reading and interpretation of the best in twentieth century novels from England, America, France, Germany and Russia as they mirror the social and literary forces of our times. Three credits. Fall, M. F. W. 10. 

*West*

105. **History of the English Language.** A study of the evolution of the English language from the Anglo-Saxon times to the present. Three credits. Winter, M. W. F. 2. 

*Hendricks*

110. **Advanced Composition.** Required of Upper Division students. The course will emphasize correctness, vocabulary, selection and organization of material, clearness, and interest in expository essays. Four credits. 

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111 or 211. **Technical Writing.** Emphasis will be placed upon bibliography, research methods and final form of technical report. May be taken in lieu of 10. Four credits. Fall, Winter, and Spring, M. T. W. Th. 1. 

*Hendricks*

117. **Writers Workshop.** For students who desire special assistance in imaginative writing. Admission is granted to all who show a particular talent in the writing of prose or verse, but prospective students are required to consult the instructor before registering. Credit and class time arranged each quarter. 

*West*

118, 119. **Creative Writing.** Short stories essays, poetry. Considerable freedom of choice as to type. To register for Winter quarter exclusive of Fall quarter, consult instructor. Three credits each quarter. Fall and Winter, M. W. F. 11. 

*West*

123. **(Education 123). The Teaching of English.** A practical course planned for those who are either teaching or planning to teach English in public schools. The purpose is to study both materials and methods in the three fundamental areas of English instruction: grammar, composition, and literature. This course satisfies part of the education requirement for the teacher's certificate. Three credits. Fall, M. W. F. 11. 

*Hayward*

130. **Book Reviewing.** How to review books; emphasis is placed on literary evaluation and discussion of both fictional and non-fictional books. A course
134. Literary Criticism. A study of the masterpieces of criticism from Plato and Aristotle to Croce with the aim of developing in the student an awareness of critical standards throughout the ages. Four credits. Spring quarter, M. W. Th. F. 11.

135. Modern Literary Criticism. A study of critical essays since Croce, with particular attention given to T. S. Eliot and the modern American school. Four credits. (Not given 1946-47.)

143. Soviet Literature in Translation. A study of the literature produced in Soviet Russia between the year 1918 and the present. Special emphasis will be given to the works of Gorki, A. Tolstoi, Ehrenburg, Sholokov, and others. Five credits.


150. Rocky Mountain Literature. A study of the primary writers of the Rocky Mountain area with emphasis on contemporary authors in the novel, short story, and verse. The particular esthetic problems of the writer in the Rocky Mountain area are considered. Five credits. Spring, Daily 9.

Thomas Mann. (See German 153.)

159. Emerson and Thoreau. A study of the essays, lectures, and poetry of the two principal figures of the Concord Group as representatives of the literature and thought of their time and as thinkers whose ideas are still important. Three credits. Spring, M. W. F. 9.

161. Medieval Literature. English literature from Beowulf to Wyatt and Surrey exclusive of Chaucer. Emphasis is placed on the epic and the metrical romance. Some continental literature is included. Reading is done in translation. Five credits.


170. Milton. Selected prose and poetry with special emphasis on Paradise Lost. It is desirable, though not necessary, to have English 46 and 47 before taking this course. Five credits. Spring, Daily 8.


185. Eighteenth Century Novels. This course will examine a limited and selected number of works, with particular attention paid to Tom Jones and Tristram Shandy. Two credits. Fall, T. Th. 9.
190. Romantic Period. A brief study of the precursors of romanticism; a study of the literature from 1790-1832, with emphasis on poetry. Five credits. Sorensen

191. The Victorian Period. A comprehensive review of the literary influences and personalities of the period, with emphasis on the chief poets and prose masters of the age. Five credits. Winter, Daily 9. Hayward

193. Arnold and Carlyle. Two credits. Fall, T. Th. 11


196, 197, 198. English Seminar. Directed readings in the longer masterpieces of English Literature which normally cannot be covered in survey and period courses. Students will be given individual direction in reading and reporting on the longer works of important authors, with special emphasis on the novel and the drama, both British and American. Required of all English majors. Two credits per quarter. Fall, Winter, and Spring, T. Th. 1. Staff

JOURNALISM

Major students in Journalism should complete English 1, 5, 10, 12, 13, 14, 16, 53, 110, 112, 113 or 156, 114, 115, 116, 117 or 118 or 119, 120.

They are urged to complete as many of the following as possible: English 40, 46, 60, 61, 63, 105. It is recommended that a minor be selected from the following: Accounting, Art, Business Administration, Economics, History, Modern Languages, Political Science, Psychology, Sociology, Speech.

4. Exploring Journalism. An introduction to the subject, with discussions of opportunities in journalistic vocations and qualifications for success in these fields. Practice in various types of writing is given to enable students to estimate their aptitudes and interests. Two credits. Fall, T. Th. 9. Staff

12. Newspaper Reporting. Lectures, practice, and group discussions on the work of the reporter and correspondent. Students are required to cover assignments for college, local, and state newspapers. Three credits. Fall, M. W. F. 11. Culmsee


112. The Writing of Feature Articles. Lectures and practice in preparing feature articles for newspapers and magazines. Analyses of periodicals will be made to determine available markets and what editors will buy. Three credits. Winter, M. W. F. 9. Culmsee

113. Publicity Methods. A detailed study of media and methods used to inform the public and conduct public relations work as required by corporations, public institutions, service organizations, and governmental agencies. Prerequisites: 12, 13, 14. Two credits. Spring, T. Th. 9. Staff


156. Principles of Advertising. (See Merchandising Department, School of Commerce, for description.) Five credits. Winter, Daily 8.

Geology

J. STEWART WILLIAMS, Professor; PHILIP F. FIX, Associate Professor.

Geology Club: The Geology Club, an organization of geology students under the supervision of the Department of Geology meets in the lecture room of the department at 8:00 p.m. on the second Thursday of each month. The programs consist of talks by guests, faculty members, and students. All interested persons are invited to attend. Regular attendance is required of all geology majors.

Major in Geology: The following courses, or their equivalents, outside the Department of Geology, are required of Geology majors: Chem. 3, 4, and 5; C. E. 81, 82, and 83; English 110 and 111; Physics 20, 21, and 22; Math. 84, 85, and 46. The following courses in the department, are required of majors: 1 or 3, and 2; 101, 102, 106 or 108, 110, 112 or 113, 114, 115, and 120.

Field Trips: Since field work is a very essential part of the study of Geology, majors should be prepared to devote most of the Saturdays during the Fall and Spring quarters to this work. Two longer field trips, each of several days' duration, are taken each year, one in the Fall quarter and one in the Spring quarter. Majors should plan to take as many of these trips as possible, and attendance on the majority of the trips is required for a major.

1. Introductory Physical Geology. A general survey course of the whole field of physical geology for arts students and others who desire only a broad introduction to the subject. This course is continued in Geology 2, for which it is a prerequisite. Closed to students who have had Geology 3 or equivalent. A one-day field trip is required in Fall and Spring quarters. Five credits. Fall Daily 10. Winter, Daily 8. Spring, Daily 8. Wiliams 11.

2. Introductory Historical Geology. A continuation of Geology 1 covering the field of historical geology. A one-day field trip required Spring quarter. Prerequisite, Geology 1. Five credits. Winter, Daily 10. Williams 11.

3. Physical Geology. This course is designed for forestry, engineering and soils students and others who desire a substantial introduction to physical geology. Not open to students who have taken Geology 1 or equivalent. A one-day field trip required Fall and Spring quarters. Five credits. Fall, M. T. W. Th. 9; Lab., T. or Th. 2-5. Spring, M. T. W. Th. 10; Lab., T. or Th. 2-5. Williams 11.


103. Engineering Geology. The application of geology to engineering problems. A course for senior engineers. Three credits. Spring, T. Th. 11; Lab., F. 2-5.

106. Invertebrate Paleontology. An introduction to the study of fossils. Living example of each of the groups of animals with important fossil representatives will be used as an introduction to the fossil forms of that group. Methods of preparation and study will be developed from work upon material collected by the student himself. Prerequisite, Geol. 2 or Zoo. 1. Five credits. Winter, T. Th. 10; Lab., M. W. F. 2-5.

108. Stratigraphy. An introduction to the processes by which the sedimentary rocks have been formed, and to their original structures, followed by a study of the stratigraphic systems and their identification by guide fossils. Field trips required. Prerequisites, Geol. 3 and Geol. 106. Five credits. Spring, M. W. F. 9; Lab., M. 2-5 and alternate Saturdays 3-5.

110. Structural Geology. Rock structures and their formation, including mountain building processes. Emphasis will be placed on the recognition and interpretation of folded and faulted structures in the field. Written reports and field trips required. Prerequisite, Geol. 3. Five credits.

112. Economic Geology—Nonmetals. A study of geological occurrence, origin, and distribution of coal, petroleum and natural gas, building materials and other nonmetallic minerals. Commercial requirements, preparation, and marketing of these substances will also be considered. Prerequisite, Geol. 101. Five credits. Fall, M. W. F. 10; Lab., T. Th. 2-5.


114. Field Methods. Field practice in measurement of the attitude and thickness of formations, field use of topographic maps, and note taking. Mapping by pacing and compass, and plane table. Prerequisites: Geol. 3, C. E. 81 and 82. Five credits.

115. Advanced Physical Geology. A study of those phases of geology that are of particular interest to students of conservation in the Western States. Processes of erosion, action and development of streams, land forms, subsurface water, etc. Prerequisites: Geol. 3 and College Mathematics, Chemistry and Physics. Five credits. Fall, M. T. W. Th. 11; Field Study F. 2-5.

16 or 116. Special Problems. Direction in the study of special problems in which a student has become interested, and upon which he desires to make written reports. From one to six credits, not to exceed two in any quarter. Time arranged.

120 or 220. Thesis. Senior College or graduate thesis. A thesis on some field problem is required of majors and five credits are given for its completion. Registration for this undergraduate thesis is limited to the Fall or Spring quarter. It must be for five hours and the thesis must be completed in one quarter. Registration for the graduate thesis may be for one, two or three quarters, and nine to fifteen credits are given for its completion.

230. Graduate Seminar. Two to five credits. Any quarter. Time arranged.
History

JOEL E. RICKS, Professor; JOHN DUNCAN BRITE, Associate Professor.

See pages 43 and 44 for courses that may satisfy group requirements.

Students majoring in History should complete the following classes: History 1, 2, 13, 14, 105, 106, 124, 126, 185, 171A, 175. Students majoring should consult the head of the department for registration.

History majors intending to pursue graduate work should complete two years of French or German.

1. Early European History. A survey of the medieval and early modern European periods from the fall of the Roman Empire through the period of the Renaissance, the Reformation and the religious wars. This course is especially planned for those desiring to know the salient movements and events of the Middle Ages. It will include a study of feudalism and chivalry, the rise of towns and centralized government, the history of the medieval church and of Islam, and the Crusading movement. Five credits. Fall, Daily 11.

2. Modern European History. A survey of the early and recent periods of modern European history from the seventeenth century to the Second World War. This course is especially planned for those desiring to know the salient movements and events of modern Europe. It includes a study of overseas expansion, the rise of parliamentary government, the age of reason, the French Revolution and Napoleon, the growth of liberalism and nationalism in the nineteenth century, the Industrial Revolution, the rise of Socialism, and the causes and results of the World War of 1914. Five credits. Winter and Spring, Daily 10.

4. World Civilizations. Survey of the civilizations of the world from ancient times to the sixteenth century. This course is planned to meet the needs of students who wish to understand the main currents in world development and who do not have time for a more detailed course. Attention will be given to the life, principal contributions, and significance of past civilizations. Five credits. Winter, Daily 9. Spring, Daily 9.

8. Recent European History. This course will cover the period from the Treaty of Versailles in 1919 to the present time, emphasizing the problems following the last war and the underlying causes of World War II. Three credits. Fall, M. W. F. 11. Winter, M. W. F. 11. Spring M. W. F. 9.

13. Early United States History. A survey of United States history from the earliest times through the Civil War. This course is for those who wish to understand the important movements and institutions of America. It will include the colonization of the Atlantic seaboard, the Westward Movement, the Revolution, the Constitution, the beginnings of American government, the rise of American democracy, social and economic movements, the rise of sections, expansion, nationalism and the Civil War. Five credits. Fall, Daily 9. Winter, Daily 9. Spring, Daily 10.

14. Modern United States History. A survey of United States history from the close of the Civil War to the present. This course is for those who wish to understand the significant movements and events of the modern United States. It will include reconstruction, industrialism, the last frontier, the agrarian revolts, imperialism, the eras of reform, American culture, the new democracy and the two World Wars. Five credits. Winter, Daily 9. Spring, Daily 10.

21. Hispanic American History. This course is planned to meet the needs of students who desire to understand the main developments in America south of the United States. A brief survey of the beginnings and colonial development of Spanish and Portuguese America will be followed by a more detailed
study of the revolutions, establishment of republics, the culture and international relations of the Hispanic American nations, and will include the Monroe Doctrine and Pan-American proposals. Five credits. Winter, Daily 10. 

Ricks

22. The Pacific Area and Asia. This course will emphasize the modern problems of the Pacific areas and Asia. It will include also a brief survey of the cultures and history of these peoples as well as a more intensive study of their movements and aspirations. The background and nature of the Second World War in the Pacific and Asia will be included. Three credits. Fall, M. W. F. 10. Winter, T. Th. 8, M. 1. Spring, M. W. F. 11. 

Ricks

34. English History. A survey of English history from the earliest times to the present day. The period before 1485 will be rapidly reviewed. The emphasis will be placed upon the period of the Tudor and Stuart rulers, the growth of the British Empire, and the impact of modern forces like the Industrial Revolution upon the British Isles. Five credits. Spring, Daily 8. Brite

105. Greek History. A study of the civilization of the Hellenic peoples from their beginnings in the days of Aegean civilization. While the politics, art, literature, and philosophy of the fifth and fourth centuries B.C., will be stressed, attention will be paid to the spread of their culture throughout the Mediterranean world during the time of Alexander the Great. Four credits. Fall, M. W. Th. F. 11. 

Brite

106. Roman History. From the beginnings of the Roman Republic to the decline and fall of the Empire in the Fifth Century A. D. Three credits.


135 or 235. United States History. History of the Far West. This course will deal with the region from the Rockies to the Pacific Coast with special emphasis upon the Intermountain West. Five credits. Spring; Daily 8. 

Ricks


Ricks

175. History of American Democratic Thought. This course will trace American democratic thought from the Revolutionary War to the present. Three credits. Fall, T. Th. 10, M. 1. 

Ricks

Landscape Architecture

Administered jointly by the School of Agriculture and the School of Arts and Sciences

L. S. MORRIS, Associate Professor.

3. Elements of Landscape Architecture.

10, 11. Plant Materials.
20. Drawing.
30. History and Literature of Landscape Architecture.
60, 61, 62. Architectural Design.
130. Recreational Planning.
140, 141, 142. Landscape Design.
150, 151, 152. Planting Design.
102 UTAH STATE AGRICULTURAL COLLEGE

160, 161, 162. Landscape Construction.
170. Civic Planning.
190. Special Problems.

See Landscape Architecture in School of Agriculture for course descriptions.

Mathematics

V. H. TINGEY, Professor; MARION T. BIRD, Associate Professor;
RALPH L. CALVERT, NEVILLE C. HUNSAKER, Assistant Professors.

See pages 43 and 44 for courses that may satisfy group requirements.

Two types of majors are offered in the Mathematics Department. Those intending to do graduate work in mathematics take the regular major. Those intending to teach in high schools take the regular major or the teaching major.

Regular Major: Mathematics 33, 34, 35, 46, 60, 97, 98, 99, 119, 120, 122, 130, 131, 152. Students who have had the equivalent of any of the above will not be required to take that particular course. Physics 20, 21, 22 and nine credits additional in either Physics or Chemistry of senior college grade are required. Chemistry 3, 4, and 5 are required. A reading knowledge of French and German is strongly recommended.

Teaching Majors: Students expecting to teach mathematics in high school must meet the state requirement for certification. Teaching majors must take the following courses or their equivalent: Mathematics, 33, 34, 35, 46, 97, 98, 99, 111, 119, 120, 122, 130, 131; also Physics 20, 21, 22; Chemistry 3, 4, 5; and nine additional credits of Physics and Chemistry of senior college grade.

One year of high school algebra and one year of high school plane geometry are prerequisite to all college mathematics.

Mathematics A. Introduction to Algebra. For students who have had no high school algebra and others who may want to refresh themselves on the elements of algebra. No credit. Fall, Winter, Spring, T. Th. 1, W. 12. Staff

Mathematics B. Plane Geometry. For students who have had no high school plane geometry. No credit. Winter, Daily 1. Staff


34. Introduction to College Algebra. Prerequisite: one year of high school algebra. Students who have had more than one year of high school algebra will not be given college credit for Mathematics 34. Three credits. Fall, M. W. F. 8, 10, 11, 1. T. Th. 1, W. 12. Winter, M. W. F. 8, 11, 1. T. Th. 1, W. 12. Spring, M. W. F. 8, 1. Staff


46. Plain and Spherical Biogonometry. Prerequisite: 35. Five credits. Fall, Daily 10. Winter, Daily 10, 11, 1. Spring Daily 8, 9, 10, 11, 1. Staff


120. Modern Geometry and Higher Plane Curves. Prerequisite: 97. Three credits. Spring, time arranged. Calvert


130. Advanced Calculus. Prerequisite: 99. Three credits. Fall. Time arranged. Hunsaker


Military Science and Tactics


For students who wish to gain a Regular Army commission, a department in Military Science and Tactics is offered through the School of Arts and Sciences. In the post-war period the colleges and universities of the nation will be called upon to supply the majority of the officer personnel needed for the Regular Army and Marine Corps.

Students majoring in Military Science and Tactics must complete the following requirements: M. S. and T., 36 credits; Mathematics 34, 35, 46, 97, 3, 99, min. 30 credits; French, German, Portuguese or Spanish, two years; Surveying 81, 82 and 83, 8 credits; Chemistry 3, 4 and 5 or 10, 11 and 12, 15 credits; Physics 20, 21 and 22, 15 credits; Political Science 10 and 102, 8 credits; History 17 and 21, 10 credits.

See pages 234-239 for descriptions of the courses in Military Science and Tactics.

Modern Languages and Latin

GEORGE A. MEYER, Professor; GEORGE C. JENSEN, Professor Emeritus; THELMA FOGELBERG, MARION L. NIELSEN, Assistant Professors.

The elementary language work is modeled on the intensive study program evolved in recent years. First-year courses in French, German and Spanish, which include two quarters' elementary and one quarter intermediate work will consist of five hours' class and five hours' laboratory per week, giving a total of twenty-one credits for three quarters' work.

In the first year's work, the student will have received a basic training in the spoken and written language with a sufficient knowledge of the fundamental grammar structure of the language to enable him to do intensive reading in the advanced courses in his own field.
The laboratory work consists of drill in conversation, dictation and sentence building leading to composition, as well as the study of the music and other cultural and social aspects of the country.

Elementary language sections will be limited to an enrollment of twenty.

Students desiring to enroll in language classes will consult with the instructor in order to be placed to their best advantage.

To conform with national standards the faculty has ruled that no credit in a beginning language may be used towards graduation until 14 credits have been accumulated.

Major in a modern language:

French: The following courses are required: 1, 2, 101, 102, 105, 110 and twelve credits numbered above 110.

German: Forty-five credits including 1, 2, 101, 102, and fifteen credits from courses numbered above 103.


22. Italian Pronunciation. Same as for course 21. Two credits. Fall. T. Th. 1.


FRENCH


106, 107, 108. Selective Readings. Open to students who have completed French 104 or its equivalent. Readings and reports in various fields, scientific or literary. One or two credits. Fall, Winter, Spring. Arranged. Staff.


120. The Comedies of Molière. A study of Molière's plays as social criticism. Two credits. Fall, T. Th. 2. Meyer.

121. French Classic Drama. A study of the plays of Corneille and Racine. Two credits. Winter, T. Th. 2. Staff.


129, 130. French Literature of the 18th Century. Special emphasis on the philosophy of the period—Voltaire, Rousseau, Buffon, Diderot. Two credits each quarter. Fall and Winter. Time arranged. Staff.


GERMAN

1. 2. Elementary German. Seven credits each quarter. Fall, Winter, Section 1, Daily 9. Section 2, Daily 11. Labs., Daily 1-2. Jensen and.......


102. Intermediate German. Three credits. Fall, M. W. F. 8. Staff


106, 107, 108. Selective Readings. Open to students who have completed German 4 (or 104) or its equivalent. Readings and reports in various fields, scientific or literary. One or two credits. Fall, Winter, Spring. Arranged.


121. Lessing—Plays and Biography. Two Credits.

122. Schiller—Poetry, Plays and Biography. Two credits. Spring. Time arranged.


130. Goethe's Faust. Prerequisite, two years of college German or its equivalent. Three credits. Winter. Time arranged.


133. German Drama of the Nineteenth Century. Rapid reading and discussion of representative plays from Kleist to Hauptmann. Three credits. Staff

150. Schnitzler's Stories and Plays. Two credits.

151. Hauptmann's Plays and Novels. Two credits.

153. Thomas Mann—Novels, Novellen, and Essays. His life and philosophy receive consideration. The course will be conducted in English and readings will be in translation. Either German or English credit will be given. Three credits.

SPANISH

1, 2. Elementary Spanish. Seven credits each quarter. Fall, Winter. Section 1, Daily 10; Labs., Daily 1-2. Section 2, Daily 8; Labs., Daily 1-2.


106, 107, 108. Selective Readings. Open to students who have completed Spanish 104 or its equivalent. Readings and reports in various fields, scientific or literary. One or two credits. Fall, Winter, Spring. Arranged.

PORTUGUESE


LATIN

1, 2, 3. First-Year Latin. An introductory course with special emphasis on the relation of Latin to English. Study of vocabulary and word-formation as an aid to better comprehension of our own tongue. Especially recommended for English majors and for pre-law and pre-medical students. The course includes readings from Caesar and various other Latin writers. Five credits each quarter. Fall, Winter, and Spring, Daily 10.

101, 102, 103. Virgil and Cicero. Selected readings from the orations of Cicero and Virgil’s Aeneid. Also miscellaneous readings from Pliny, Catullus, Ovid, and other Roman authors. During the year there will also be readings in English in the history of Roman literature. This course is open to all students who have had one year of college Latin or two years of high school Latin. Three credits each quarter. Fall, Winter, and Spring. Time arranged.

Physics

WILLARD GARDNER, Professor; PHILIP J. HART, L. S. COLE, Associate Professor; E. W. PAYNE, Assistant Professor; JAY O. JENSEN, Instructor.

Mathematics 34 or equivalent must precede or parallel Physics 6, 7, 20, 21, or 22, whichever is taken first.

See pages 43 and 44 for courses that may satisfy group requirements.

Calculus and Physics 20, 21, 22 are prerequisite for all courses numbered above 100.

Suggested courses. The course taken will depend on whether the student wishes to continue with graduate work in Physics or whether he desires to teach in high school. Substitutions or changes must be approved by the head of the department. For each year, the first group of courses should be taken by all majors. Those courses preceded by (**) are for students preparing to do graduate work; and, preceded (††), are for prospective high school teachers. A minimum of 30 senior college credits in Physics must be obtained.

Freshman Year: Physics 20, 21, 22; Math. 34, 35, 46; Bacteriology 1; Economics 51; **(5 hours Social Science); †(Sociology 70).

Sophomore Year: Math. 97, 98, 99; Chem. 3, 4, 5; **(German); †(Psychology 4; English 10; Psychology 3).
Junior Year: Physics 120, 121, 130. Math. 119, 120, 122; **(German 4, or French; English 110; 5 hours Biological Science; 5 hours elective); †(Psychology 105, Psychology 102); (Education 111, 113, 114; Speech 1; English 110).

Senior Year: Physics 145, 153, 154, one other year course in Physics; **(Math. 130, 131; Chem. 104, 105, 106; Physics 108, 193, 194, 195; English 110); †(Chem. 121; Education 127, 129a and 129b [Winter and Spring] 5 hours; Language group Electives 3-8 hours).

A Teaching Minor in Physics will be approved only for students majoring in closely related fields. Such students must complete Physics 20, 21, 22.

1. Household Physics. Designed primarily for Home Economics Majors. The course covers selected topics in Physics of practical importance in the household, with heat and electricity receiving greatest emphasis. Five credits. Any quarter. Lecture, Daily 10. Laboratory F. 2-4, for students wishing it.

3. Introductory Physics. A non-technical course in physics designed for students who do not expect to major in the exact sciences but who want a knowledge and understanding of the fundamental physical principles and their applications. Lecture, Daily 10. Laboratory F. 2-4, for students wishing it.

6, 7. General Physics. Physics 6 covers mechanics, constitution of matter, heat, and meteorology. Physics 7 includes primarily electricity and magnetism, with a survey of the fields of light and sound. Primarily designed for students in Forestry and Agriculture. Five credits.

Physics 6—Fall or Winter. Physics 7—Spring. Lect., M. W. Th. F. 11; Quiz section. Th. 12; Lab., (One of the following periods) M. or T. 8-10, or W. Th. or 3-5.


20, 21, 22. Mechanics and Molecular Physics. Electricity and Magnetism. Heat, Light, and Sound. A course designed for Science majors, Engineers, and students preparing for Medicine. Recommended for majors in Agriculture who intend to do graduate work. Prerequisite, high school Physics and a working knowledge of trigonometry. Students not majoring in Physics should take this in the sophomore year. Five credits.

Sec. 1. Given in order 20, 21, 22. Lect., M. W. F. 8; Lab., M. W. 10-12, 13, or 3-5, or T. Th. 3-5. Quiz sections T. Th. 8.

Sec. 2. Given in order 21, 22, 20. Lect., M. W. F. 9; Lab., M. W. 10-12, 13, or 3-5, or T. Th. 3-5. Quiz sections T. Th. 9.

Calculus and Physics 20, 21, 22 are prerequisite for all courses numbered above 100.

Physical Chemistry. See Chemistry 104, 105, 106 and Chemistry 109, 10, 111.

At the beginning of each quarter, the schedule of the following Advanced Physics courses will be arranged to meet the requirements of all registered students.

108. Advanced Laboratory Work. Recommended for students majoring in Physics. Can be taken only by special arrangement. Any quarter. Time and credit arranged.

114. Soil Physics. The fundamental laws of Physics will be reviewed, with emphasis on mechanics and thermodynamics and their relation to soil problems. Some time will be devoted to significant features of modern physics.
with particular reference to the theory of surface forces as they influence the behaviour of soil colloids. Special attention will be given to the dynamics of soil moisture. A knowledge of elementary Physics and Mathematics will be essential as well as a good foundation in soils. Three credits. Winter, M. W. F. 8.

120, 121. Modern Physics. (Recommended for Juniors.) A study of electrons, ions, atomic structure, and radiation. Three credits each quarter. Fall and Winter. Time arranged.


145, 146. Vector and Tensor Analysis. An introduction to vector and tensor analysis and their applications. Fall and Winter. Three credits each quarter.


166, 167. Geometrical and Physical Optics. Three credits each quarter. Fall and Winter.


182. Electronics. The concept of the electron, its relation to the structure of the atom, to the conduction of electricity, to ionization, to photoelectric and thermoelectric effects, etc. Emphasis will be placed on the design and construction of electronic measuring equipment for the modern research laboratory, for communication, and for the numerous controls in the modern factory. Three lectures; one lab. Four credits each quarter.

190, 191, 192, (290, 291, 292). Theoretical Physics. Two or more credits each quarter. Fall, Winter, and Spring. Time arranged.

193, 194, 195, (293, 294, 295). Seminar in Physics. A weekly meeting of staff and Physics majors, consisting of reports on recent developments in Physics. Students may register and receive credit for course by making reports. One credit each quarter. Fall, Winter, and Spring. Time arranged.

250. Research in Physics. Time and credit to be arranged before registration. Any quarter.

Upon sufficient demand, courses numbered 120-180 will be extended to cover more advanced work. Numbers will follow in consecutive order. Graduate credit may be given for certain extended courses taken by graduate students upon completion of extra work. In such cases the number will be the corresponding "200" number.
Speech

chester J. Myers, Professor; Floyd T. Morgan, Rex E. Robinson, Assistant Professors; Mr. ................... , Instructor.

Forty-five credits of Speech are to be completed for the major. For prospective teachers, the distribution of these credits is to be as follows: courses in Public Speaking, 10 credits (Speech 25 or 125 required of all majors); courses in Interpretation, 10 credits (Speech 124 required of all majors); courses in Pathology, 5 credits; courses in Dramatic Literature, 5 credits; courses in Play Production, 9 credits; elective courses in Speech, 6 credits. Students who do not intend to teach may apply for permission to substitute courses in their special fields of interest for some of those in this outline. A special major for students whose main interest is Speech Correction may be outlined by consultation with the Head of the Speech Department.

All Speech Minors must complete at least 18 credits of Speech work. Courses to be taken will be determined in consultation with the head of the Speech Department.

Speech 123 is recommended for those who are planning to teach Speech.

Composite English-Speech Major. Students whose major interests are divided between English, Journalism and Speech may take a composite English-Speech major. Such a major relieves the student of all requirements for a minor. This combination is recommended highly. Consult with the Head of the English Department and the Head of the Speech Department.

1. Fundamentals of Speech. Elementary training in Public Speaking. Includes training in daily speaking situations, voice improvement. Clinic assistance available to students who need it. Time for clinical assistance to be arranged. Five credits. Fall, Winter, Spring, Daily 8, 9, 10, 1. Staff

4. Principles of Reading. The principles of effective oral and silent reading. Emphasis on oral delivery of literary selections. A preparatory course for understanding and appreciation of the printed page. Practice material includes not only standard literature, but also everyday reading matter. Five credits. Fall and Spring, Daily 9. Morgan

5. Extempore Speech. Designed to meet the specific needs of professional people in the practice of their profession. Basic principles of effective speaking, with emphasis on composition and delivery of the forms of address of greatest interest to those for whom the course is provided. Three credits. Fall, M. W. F. 11; Winter, M. W. F. or T. Th. F. 10. Robinson

7. Basic Principles of Voice Technique. A training course, adapted to individual needs and abilities. Exercises for flexibility of voice, articulation, and pronunciation. Recommended for all Speech majors and minors, for prospective teachers, and all others whose individual needs cannot be met successfully in Speech 1 or other courses in public speaking and oral interpretation. Five credits, Spring, Daily 10. Staff

12 or 112. Private Instruction. Individual attention given in private to particular needs of the student in an effort to eliminate personal defects, develop skill, and solve individual speech problems. Recommended for anyone needing personal speech and to speech majors. Special fee. Any quarter. Time and credit arranged. Staff

13 or 113. Debate. This course is designed primarily for candidates for the junior debate team though registration is not limited. It provides study of procedure in argumentation and debate, and offers opportunity for preparation and presentation of debates on subjects chosen for inter-collegiate competition. Some presentation of discussions on current events before community audiences. Only one quarter's credit each year may be used toward graduation. Students should register fall quarter if possible. Three credits. Fall, Winter, M. W. F. 2. Robinson
16. Dialect. A study of the most prominent dialect forms, their principles and uses. The dialect work of such writers as Burns, Kipling, Drummond, Riley, Dunbar, Harris, and Kirk will be studied, discussed and learned. Three credits. Spring, M. W. F. 11. (Myers)

17. The Scientific Bases of Speech. Special consideration given to voice quality, rate, intensity, and pitch from the standpoint of vocal structure and function, the physics of voice, and phonetics. Recommended for all students of Speech, and required of majors in Speech Correction. Three credits. Staff

18. Story Telling. The story as an educational factor; analysis and classification of typical stories with reference to each period of the child's development. Study of sources; adoption of material; and actual practice in story telling. Consideration is given to stories of western pioneer life. The work is designed to meet the needs of student, teacher, recreational leader, church activity leader, librarian, and parent. Five credits. Fall and Spring, Daily 10. (Myers)

24. Oral Interpretation. Intermediate course. One that puts into practice by means of platform reading, the principles studied in Speech 4. Various literary types are memorized for platform presentation. A more specialized and artistic course than Speech 4. Three credits. Fall, M. W. F. 11. (Myers)

25 or 125. Speech Composition. Advanced theory and practice of public speaking. Students will build and deliver several short speeches and will read selected masterpieces from the world's public speaking literature. Prerequisite: Sophomore Standing. Five credits. Winter, Daily 9. (Robinson)


60. Drama Appreciation. An introduction to the understanding and enjoyment of dramatic literature, radio drama, and moving pictures. Selected readings of dramatic masterpieces and other contributions to the theatre. Five credits. Winter, Daily 10. (Morgan)

75. Remedial Speech. This course is intended for those who have a noticeable difficulty with speech, in articulation, quality, pitch, intensity, or rhythm. Fall, Winter, and Spring. Time and credit arranged. Staff

81. Radio Speech. A study of speech in radio presentation. Radio programs made up of the various types of radio speaking—announcing, interview, round table, quiz, drama, folk, panel, newscasting, etc.—will be planned and presented. An effort will be made to broadcast quality work over the local radio station. Three credits. Fall and Spring, M. W. F. 2-4. (Morgan)

107. Speech Hygiene. The techniques of normal speech and the development of normal and abnormal speech. Major consideration will be given to the prevention and correction of speech abnormalities. This course is primarily designed to fulfill the speech hygiene needs of elementary school teachers. It is recommended for all secondary teachers but will not fulfill the speech pathology requirement for Speech majors. This course is required of all elementary school teachers by the State Board of Education. Three credits. Fall, W. 4:00-6:00. Staff

109. Public Discussion. Application of the various group discussion techniques to current problems. Efforts are made to have some of the discussions presented to various civic and religious organizations or to release them over a commercial radio station. Three credits. Fall, M. W. F. 11. (Greaves)
110. Public Programs. A study of types of interpretive material suitable for presentation before various kinds of audiences. Reading of short stories, plays, and novels to determine suitability. The cutting of literary types and material to suitable form and length for public reading. Three credits. Myers

111. The Psychology of Speech. A study of the principles of psychology which underlie speech. Problems to be considered includes the nature and origin of speech, emotion and speech, personality and speech, the development of speech and language in the child and the psychology of the audience. Three credits. Spring, M. W. F. 10. Staff

123. Pedagogy of Speech. A study of the methods and problems peculiar to the teaching of Speech. A study of the organization of courses and lesson plans is included. Students may register only with the permission of the instructor. Two credits. Fall, T. Th. 1. Myers

124. Advanced Interpretation. The mastering of significant selections from the great writers. The student grows in power to interpret permanent literature. Reading from manuscript and from memory. Four credits. Winter, M. W. Th. F. 11. Myers

145. Directing. A course designed to equip the student with a working knowledge of the principles of directing and to give practice in directing plays. Such principles and problems as characterization, composition, picturization, movement, emphasis, preparation of the manuscript, play selection, casting, rehearsal organization and procedure, etc., will be studied. Students of this course will direct students of Acting, Speech 45, in one-act plays. Three credits. Winter, M. W. F. 2-4. Staff

150. Drama Production. Study and application of the materials and processes of play production. Scene design and construction, scene painting, lighting, costuming, management, advertising, etc., are studied and principles learned applied to production of plays. Students will be assigned to work on staffs and crews of College-Community Theatre and Workshop productions. Speech majors and minors should arrange to take all three quarters of this course during their Junior year. Fall, Winter, and Spring. T. Th. 2-5. Two credits each quarter. $3.00 fee for the year. Staff

154. Children's Theatre. Creative dramatics for children. A course in educational dramatics for students who wish to prepare to direct children in dramatic work. A study will be made of plays suitable for primary and intermediate schools. Courses in dramatics will be outlined, stories dramatized, and plays produced. The College Training School will afford opportunity for this work. Of special interest to prospective elementary school teachers. Consult instructor before registering. Three to five credits. Time arranged. Myers

171. Speech Pathology. A comprehensive presentation of the generally known facts regarding the symptoms, nature, prevention, causes, and management of deviations from normal speech. This course is a highly technical course designed for teachers of speech and speech clinicians. It is required of all Speech majors, all those taking a composite Speech and English major and is elected by all majors in Psychology. Five credits. Winter, Daily 10. Staff

173. Speech Clinic. Application and discussion of methods applied to speech correction in the clinic. Training and practice through the supervised handling of selected cases. Students who have had one quarter of experience are allowed to participate in extension clinics. Prerequisite or corequisite, Speech 171. Consult the instructor for permission to register. Any quarter. Time and credit arranged. Staff

183. Problems in Speech. Especially selected work, individually assigned, handed, and directed in consultation with the student. Special Speech problems of merit and of mutual interest to students and instructors are investigated and reported upon in this course. Consult the instructor for permission to register. Any quarter. Time and credit arranged. Staff
Zoology, Entomology and Physiology

Administered jointly by the School of Arts and Sciences and the School of Agriculture

D. M. Hammond, G. F. Knowlton, C. J. Sorensen, Professors; J. Sedley Stanford, G. H. Kelker, Associate Professors; Clyde Biddulph, Assistant Professor; William Scholes, Instructor; Howard E. Dorst, Walter E. Peay, Keith E. Evans, Collaborators in Research, U.S.D.A.

ZOOLOGY

For a major in Zoology the following courses must be taken: Zoology 3, 4, 12, 106, 114 or 116, 117, 118, 119, 124, 126, 131; Entomology 13, 115. Also, the following courses are recommended: Mathematics 34, 35, 111 or Agronomy 115; Chemistry 3, 4, 5, 121, 122; Physics 21, 22, 23; Botany 21, 22, 23; Bacteriology 1, 2; Geology 1, 2. For students planning to do post graduate work leading toward the Ph.D. degree, at least one year of French or German is also recommended.

For a pre-medical major in Zoology, the pre-medical requirements listed in the introduction to the School of Arts and Sciences must be completed, and in addition the following courses must be taken: Zoology 12, 114, 116, 119, 124, 126, 131; Entomology 115.

1. Principles of Biology. A fundamental course in the basic life principles as illustrated in both plant and animal forms. Special attention will be given to the nature and structure of protoplasm, differentiation in plant and animal cells, adaptation, reproduction and development, basic metabolic processes, heredity and evolution, types and phylogenetic relationships as exhibited in the major groups of plants and animals. For junior college students, except those who may elect Botany 21, 22 and 23, or Zoology 2 or 3 and 4. Five credits. Fall, Winter, Spring. Daily 9.

1a. Laboratory in Biology. Exercises illustrating the general principles of biology. Prerequisite: Biology 1, unless taken concurrently with Biology 1. One credit. Fall, Winter, Spring. Th. or F. 2-5.

2. General Zoology. A brief survey of the more important groups of animals, including the organization, behavior, reproduction, classification and relationships of each group. The basic principles of greatest importance in the field of Zoology will receive some consideration. This course is especially designed to meet the needs of students in the schools of Agriculture and Forestry for a basic course in Zoology. Five credits, Fall, Spring, M. W. F. 11; Lab., T. Th. 2-5.

3. Invertebrate Zoology. This course is an introduction to the invertebrate animals. Classification and relationships, structural characters, development and functions are emphasized. Some attention is also given to parasitism. This course is well adapted for premedical students, Forestry (Wildlife) majors, and others who desire a comprehensive introduction to the animal kingdom. Five credits. Fall, M. W. F. 9; Lab., M. W. 2-5; Winter, M. W. F. 10; Lab., T. Th. 2-5.

4. Vertebrate Zoology. The same general plan as given in course 3 is followed in the study of the vertebrates. Some attention is given to the local fauna. Five credits. Winter, Spring, M. W. F. 9; Lab., M. W. 2-5.

12. Principles of Genetics. A technical course in the basic principles underlying heredity and variation, and their application to the problems of plant and animal breeding, and human inheritance. Prerequisite, Zoology 2, or 3 and 4, or Botany 21, 22, and 23. This course should usually not be taken before the Sophomore year. Five credits. Fall, Spring, M. T. W. Th. 10; Lab., Sec. 1, Th. 2-5; Sec. 2, F. 2-5.
106. Zoological Literature. The historical development of Zoology and Entomology, their literature and bibliographies are discussed. Each student is assigned, or may choose, a report on the literature of some insect or other animal. Prerequisite, two or more of the fundamental courses required of department majors. One lecture and one lab. Two credits. Spring, M. 11, one hour arranged.

111. Heredity and Eugenics. A non-technical study of the more evident behavior of the germ cells in reproduction, the simpler principles underlying the inheritance of traits and the inheritance of characteristics in humans. Consideration is given to the eugenic value of human races, inferior and superior families, sexual selection and marriage, birthrate, immigration, and other principles having eugenic significance. Four credits. Fall, or Winter, M. T. W. Th. 1.

114. Protozoology. A survey of the phylum Protozoa, with emphasis on the forms parasitic upon man, and domesticated and wild animals. The structure, physiology, and reproduction of the Protozoa are considered in their relation to these aspects of cells generally and to the field of Biology as a whole. In the laboratory the protozoan forms of local streams and ponds are studied, as well as the forms living on and in other animals and man. Prerequisite, Zo. 3. Three credits. Fall, T. Th. 8; Lab., W. 2-5.

116. Parasitology (Helminths). A study of the worms parasitic on man, domestic and wild animals, and a consideration of the diseases caused by them. The flukes, tapeworms and roundworms, occurring in this region and in the tropics, will be emphasized. The study includes diagnosis, life histories, transmission, treatment and prevention of the important diseases caused by worms. Prerequisite, Zo. 3. Three credits. Spring, M. W. 9; Lab., W. 2-5.

117. Methods and Elements of Animal Histology. An introduction to the techniques employed in making preparations of animal tissues for microscopic study, and a consideration of the structural characteristics of the tissues and principal organs in representatives of the groups of animals, especially vertebrates. Four credits. Fall, T. Th. 9; Lab., T. Th. 2-5.

118. Vertebrate Embryology. An introduction to the principles of development of the vertebrates, including the formation of gametes, fertilization, cleavage, gastrulation, formation of germ layers, establishment of body form, and organogenesis. In the laboratory the development of the frog, chick and pig is studied. Required of premedical students. Prerequisite, Zo. 4 or equivalent. Five credits. Winter, M. W. F. 10; Lab., T. Th. 2-5.

119. Comparative Anatomy. A study of the fundamentals of structure of the vertebrate body. The anatomy of typical representatives of each class of vertebrates and the organ systems from the simplest to the most complex forms are studied on a comparative basis. In the laboratory, the shark and the cat are thoroughly dissected. This course provides useful training for premedical as well as Zoology majors. Prerequisite, Zo. 4 or equivalent. Four credits. Spring, T. Th. 9; Lab., T. Th. 2-5.

121. Ornithology. A course in bird study planned to acquaint the students with our native birds and with the class Aves (birds) in general. Identification, relationships, structure, habits, and distribution will be studied in classroom, laboratory, and field. Four credits. Spring, T. Th. 9; Lab., T. Th. 10-12.

122. Mammalogy. This course is designed to introduce the students to the large and very important class, Mammalia (animal), with particular reference to Utah and North American species. Identification, distribution, structure, habits, and economic importance will be stressed. Four credits. Winter, T. Th. 9; Lab., T. Th. 10-12.

123. Nature Study of Birds. Teachers and other students of nature can find in this course an opportunity to learn the names, habits, songs, foods and distribution of the more common birds of Utah. Attention is also given to prominent birds of other states and continents. Laboratory and field trips arranged. Three credits. Spring, T. Th. 1.
124, 126. Seminar. The students and the faculty of the department meet for one hour each week and hear reports from the members of the seminar on topics of mutual interest. Students majoring in the department must attend and participate in the activities of this seminar for at least two quarters. One credit each quarter. Fall and Spring. Time arranged. 

Staff

131 or 231. Organic Evolution. A critical study of the facts of evolution as obtained from a careful study of comparative anatomy, embryology, geologic distribution, blood tests, and other fields upon which the doctrine of evolution is based. Factors causing evolution will be considered and discussions will be undertaken on other bodies of related thought. Prerequisite, some thorough course in Biology. Three credits. Spring, M. W. F. 8. 

Staff

155. Ichthyology. Ecology, classification, and life histories of native and introduced fishes. Two lectures. One laboratory. Field trips. Three credits. Fall, T. Th. 9; Lab., Th. 2-5. 

Keller

199. Minor Problems in Zoology. A course dealing with research problems similar to Zo. 201, but intended primarily for undergraduate majors in Zoology and for graduate work on problems of a less advanced nature. Any quarter. Time and credit arranged. 

Staff

201. Zoological Research. The student who wishes to engage in some line of original research and is qualified to do so may elect and study some topic in the field of Zoology. Open to undergraduates only by special arrangement with the department. Thesis required. Any quarter. Time and credit arranged. 

Staff

205. Methods of Research. For students doing or intending to do original work in some line of Zoology or Entomology, this course offers instruction in selection of topics for research, organization of attack upon problems, methods of finding previously published work, outlining of the problem, illustration of the thesis, etc. Required of graduate students who are working for a Master's degree in the department. One credit. Winter, Time arranged. (Not given 1946-1947.) 

Staff

217. Advanced Histological Technique. A continuation of Zoology 111 for graduate students, and for students who wish a more thorough and extensive training in the techniques of preparation of biological materials for study. Additional technique such as the celloidin method, freezing method, embalming and injection of specimens, etc., will be undertaken. Prerequisite, Zo. 117. Two credits. Spring, M. 2-5, one Lab. arranged or time arranged with the permission of the instructor. 

Staff

ENTOMOLOGY

For a major in Entomology the following courses must be taken: Zoology 3, 4, 12, 106, 114 or 116; Entomology 13, 101, 102, 103, 108, 115, 125, 126, 128. The following courses are also recommended: Mathematics 34, 35, 111 or Agronomy 115; Chemistry 3, 4, 5, 121, 122; Physics 21, 22, 23; Botany 21, 22, 23, 130; and one basic course in each of the following fields: Agronomy, Horticulture and Truck Crops. For students who are planning to do post-graduate work leading toward the Ph.D. degree, at least one year of French or German is also recommended.

For a major in Agricultural Entomology see Department of Zoology, Entomology and Physiology, in School of Agriculture.

13. General Entomology. The structure, classification, interrelationships, and life histories of insects are studied. Some field trips are taken. This is a fundamental course and is required of all department majors. Five credits. Fall, M. W. F. 8; Lab., T. Th. 2-5. 

Stanford

101. Insect Morphology. Comparative study of insect anatomy with emphasis placed on the structures used in taxonomy. Prerequisite, Ent. 13. Required for Ent. 103, and 104. Four credits. Two laboratory periods, time arranged. Winter, M. W. 11. 

Stanford
102. Systematic Entomology. Ent. 101 is prerequisite. Each student must collect, mount, and label a representative collection of insects. The collection must contain at least 300 specimens, at least 100 species, and at least 15 orders. The whole collection must be arranged in phylogenetic sequence. Classification will include a correct placing of all specimens in orders. To be taken only with the permission of the instructor. Three laboratory periods. Three credits. Any quarter. Time arranged.

103 or 203. Systematic Entomology. Continuation of Ent. 102. The collection arranged for Ent. 102 must be enlarged to at least 500 specimens, 150 species, 100 families, and 15 orders. Classification will include a correct placing of all specimens in families. To be taken only with the permission of the instructor. Three laboratory periods. Three credits. Any quarter. Time arranged.

104 or 204. Systematic Entomology. Continuation of Ent. 103. Permission to take this course depends on the student's collection for Ent. 102 and 103. If his collection justifies further study, he may select one or two orders of insects and classify them to species. To be taken only with the permission of the instructor. Three laboratory periods. Three credits. Any quarter. Time arranged.

105. Forest Entomology. A study of the principal insects attacking forests and forest products. Some attention is also given to the principles of biological control. A brief study is made of forest vertebrates with emphasis on insect-eating birds. Three credits. Fall, T. 9, Lab., T. Th. 11-1.

108. Agricultural Entomology. Studies pertaining to insect pests of major economic importance to agriculture in Utah and the West, including their recognition, type of damage inflicted, distribution, life history, and methods of control. Insecticides, together with practical methods and timing of their application, are considered. This course is primarily for Senior College students. Five credits. Spring, M. W. F. 8; Lab., Sec. 1, T. Th. 2-5; Sec. 2, W. F. 2-5.

109 or 209. Advanced Economic Entomology. This course deals with recognition and control of important insect pests, techniques of insect control and the study of insecticides. Prerequisite: Ent. 108; with organic chemistry recommended. Five credits. Winter, M. W. F. 10; Lab., T. Th. 2-5. Knowlton

115. Medical and Veterinary Entomology. This course introduces the students to those Arthropods that annoy and transmit disease to man and domesticated and wild animals. Vectors of plague, spotted fever, tularemia, malaria and other Arthropods carrying disease will receive major attention. Prerequisite, Ent. 13 or equivalent. Four credits. Winter, T. Th. 8; Lab., T. Th. 2-5.

125, 126. Seminar. Students are assigned subjects upon which they report to the group. In the winter quarter entomological subjects are assigned, in the spring quarter subjects fundamental to both entomology and zoology. Chiefly for major students. One credit each quarter. Winter and Spring. Time arranged.

138. Aquatic Entomology. Identification, distribution, life histories and adaptations of aquatic insects will be studied with particular reference to our local streams and lakes. Three credits. Two lectures, one Lab. Spring, M. W. 1; Lab. M. or W. 2-5.

156 or 256. Chemistry of Insecticides and Fungicides. For course description see Chemistry Department.

199. Minor Problems in Entomology. A course dealing with research problems similar to Ent. 210, but intended primarily for advanced undergraduate majors in Entomology, and for graduate work on a less advanced level. Any quarter. Time and credit arranged.
210. Entomological Research. Students may select or will be assigned problems dealing with certain phases of Entomology. The amount of credit will depend on the nature of the problem and the time spent. Thesis required. Open to undergraduate students only by special permission. Prerequisites, Ent. 13, 103, and 108. Any quarter. Time and credit arranged.

Staff

PHYSIOLOGY

For a major in Physiology the following courses must be taken: Physiology 4, 5, 101, 102, 103, 121, 122, 123, 160, 195. Also courses in Mathematics, Physics, Chemistry, Zoology, Bacteriology and Nutrition are recommended.

4. General Physiology. A course for the student who desires a survey of physiology and who is not planning on advanced intensive study in the field. It deals with the functioning of the human body with emphasis upon broad, general biological principles. Five credits. Fall, Daily 8, 9, 10, 2; Winter, Daily 9, 10, 2; Spring, Daily 8, 9, 2.

Staff

5. Physiological Tests. A course of standard physiological tests illustrating fundamental principles of physiology and should be accompanied by or preceded by General Physiology 4. One credit. One day per week 2-5. Any quarter.

Staff


Staff

11. Personal Health. This course is designed to meet health problems of the college student. Two credits. Fall, T. Th. 9; Winter T. Th. 9; Spring T. Th. 11.

Staff

101, 102. Anatomy and Histology. Basically a didactic course in the macroscopic and microscopic structure of the human body but with demonstration material and applied study. Five credits each.

Staff


Staff

104. Kinesiology. A study of articulations and muscles with an analysis of movements and actions. The skeleton, manikin and man himself will afford the laboratory material. Three credits. (Recommended as preparation for this course, Anatomy 101, 102.) Spring, M. W. F. 10.

Staff


Staff

121, 122, 123. Physiology. A year's course in technical physiology designed for students desiring an intensive and detailed study of physiology. Unless special permission is granted the three courses are to be taken in sequence. As preparation, physics and organic chemistry are recommended.


Staff


Staff

123. Regulation of body temperature, the skin, sense organs, nervous system, reproduction. Three credits. Spring, T. Th. 10; M. 2-5.

Staff

150. Physiology Laboratory. Technical laboratory work for students who have had General Physiology 4. (Not open to students who have taken 121, 122, 123.) Credit (1-4) and time arranged. Any quarter.

Staff
160-260. Physiology Experimentation. Special investigations in physiology are carried out in this laboratory course. Open to students who have taken 121, 122, 123, or who have been granted special permission. Credit (2-5) and time arranged. Spring quarter. 

Staff

180-280. Advanced Physiological Hygiene. Special problems in hygiene are considered in this course. Previous work in physiology and hygiene are recommended as preparation. Three credits. Winter, M. T. W. 1. 

Staff


Staff
SCHOOL OF COMMERCE
W. L. Wanlass, Dean

Pre-legal Training .............................................. 120
Training for Government Service ............................ 120
Agricultural Economics and Marketing ......................... 122
Business Administration ........................................ 124
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Economics .................................................. 129
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General Information

The purpose of the School of Commerce is to give opportunity for a liberal education with special emphasis upon the commercial, social and political phases of life. Persons who complete the courses offered in this School are prepared to assume leadership and responsibility in business and in various industries and professions. In order to meet the growing demand and to keep pace with recent tendencies in education, students may major in Accounting, Business Administration, Merchandising, Secretarial Science, Economics, Political Science, Sociology, Agricultural Economics and Marketing.

For the professions of law and medicine some of these subjects such as Economics or Political Science afford excellent preparation. Graduates are prepared for positions as teachers in high schools. Many desirable positions as industrial managers are open to those who are qualified by training and experience. Many students who are especially qualified find employment in the field of retail and wholesale merchandising.

Special attention is called to the many opportunities for service in sociological and governmental work. (See Training for Government Service.) The Departments of Political Science and Sociology offer basic and professional courses in these fields.

For requirements for admission, certification, and graduation see pages 39 to 48.

NOTE: All students in the School of Commerce are urged to take Textiles and Clothing 15 and Principles of Nutrition 5.

Pre-Legal Training

Students who plan to go into the profession of Law may pursue a course of study, primarily in the School of Commerce, that will not only enable them to meet all entrance requirements in any American law school, but will also form an excellent foundation for the study of law.

Some law schools admit only college graduates. Others admit students on the basis of three years of college training. College graduation is desirable even where it is not required for admission.

Prospective law students may major in any department in the School of Commerce, but not less than fifteen credit hours of work should be done in each of the following fields: Accounting, Economics, Political Science, Sociology, History and English, in addition to meeting the requirements for graduation in the Major Department.

All pre-legal students should consult Professor M. R. Merrill.

Training for Government Service

The Federal Government during recent years has employed increasing numbers of College-trained men and women who are qualified for service in its various departments. In all probability this expansion of government activity will continue for several years. In suggesting the following courses the School of Commerce has attempted to indicate lines of study which will be helpful in preparing for government service. With slight modification, these courses will serve equally well to qualify the student for desirable positions outside the field of government service, as the basic requirements in both fields are similar.

Suggested Courses

I. Accounting: Accounting 1, 2, 29, 101, 102, 103, 105, 11, 120, 121, 127; Political Science 129.
II. Land Economics: Economics 28, Economics 51-52 or Agricultural Economics 53a, 5b; Agronomy 6; Political Science 1, 10 and 129; Business Administration 141; Agricultural Engineering 10; Geology 3.

In addition the student should satisfy the requirements for a major in Agricultural Economics.

III. Marketing: Economics 28, 51, 52; Mathematics 30, 60, 111. Agriculture Economics:

The student should satisfy the requirement for a major in this department.

In addition a thorough preparation should be made in the special fields in which it is desired to work such as wool, dairying, etc.

IV. Consular and Diplomatic Service: Political Science 10, 11, 12, 13, 101, 102, 104, 105, 106, 107, 129; Foreign Language, German, French, or Spanish, depending upon the location desired; English 10 or 11, 112; Economics 51, 52, 140.

V. General Administrative Training:

It is felt that anyone contemplating government service should have an intimate knowledge of the workings of our government and its relationship to industry. To supply that need the following courses are suggested: Political Science, 10a, 103, 129; or 140 or 145, 200; Economics 125, 147.


VII. Secretarial Science: Secretarial Science 30, 65, 80, 81, 82, 89, 90, 91, 94, 98, 175, 183, 184, 185, 186, 187; Business Administration 1, 2, 25, 101, 135, 136; Economics 51, 52, 140; Political Science 10, 129; Sociology 70.

VIII. Sociology:

For Case Work:

Psychology 102a, 102b, 103a and 103b, 110.
Child Development 140.
Sociology 52, 70, 102, 140, 162, 170, 172, 220.

For Social Research:

Mathematics 34, 35, and 111.
Sociology 70, 202, 220.

Thirty hours of factual courses in the Department.

Field Work under supervision.

IX. Economics: Mathematics 30, 34, 60, 111; Economics 27, 28, 51, 52, 131; Sociology 70. And the courses listed for those majoring in Economics.
Agricultural Economics and Marketing

Administered jointly by the School of Agriculture and the School of Commerce

W. P. THOMAS, Professor; G. T. BLANCH, .................., Associate Professors;
DEE A. BROADBENT, C. A. CARPENTER, E. M. MORRISON, Assistant Professors.

Students majoring in the Department of Agricultural Economics and Marketing may be graduated from either the School of Agriculture or the School of Commerce. The choice of school in which to register should be determined by the field in which the student intends to do his minor work.

Those graduating from the School of Agriculture must satisfy requirements for graduation from that School in addition to other courses prescribed by the major professor; those graduating from the School of Commerce must, in addition to satisfying the requirements for graduation from that school, include certain basic agricultural courses to be prescribed by the major professor.

In order to meet the requirements of students who plan to do graduate work or to enter into a field of employment where technical training is required, a special course has been provided for such students majoring in agricultural economics. Students satisfying requirements as prescribed for this course may graduate from either the School of Agriculture or Commerce. A schedule for this prescribed course may be obtained from the office of the Department of Agricultural Economics.

An adjustment in courses, sections, and subject matter may be made to accommodate returning service men and other students provided there is a sufficient number of students interested to warrant the change.

Rural Economy

53a and 53b. Principles of Economics. An introductory course in basic principles of Economics with emphasis on those principles which are of particular importance in the field of Agriculture and Forestry. Three credits each quarter.


Staff

53b. Winter, Sec. 1, T. Th. 10, F. 12; Sec. 2, M. W. F. 1. Spring, Sec. 3, T. Th. 10, F. 12; Sec. 4, M. W. F. 1.  

Morrison

54. Principles of Agricultural Economics. An introduction to the field of agricultural economics with emphasis on the application of economic principles to the solution of agricultural problems. Three credits. (Not given 1946-47.)


Blanch

230, 231, 232. Public Problems in Agriculture. Seminar courses designed to familiarize students with the economic implications of problems confronting agriculture. Special references will be made to war and post-war problems in agriculture. Two credits each quarter. W. 3-5.  

Thomas and Blanch

Farm Management, Land Economics and Agricultural Finance

70. Farm Accounts. Farm accounts and their application to the organization and management of farms and to the filing of income tax statements. A fee of $1 will be charged for materials supplied. Three credits. Fall, T. Th. 8, M. 3-5, Winter, T. Th. 8, M. 3-5.  

Morrison


Blanch

106. Land Economics and Utilization. A study of the economic principles underlying the utilization, valuation and tenure of agricultural land. Attention is given to prevailing land policies and to methods and techniques involved in dealing with problems of land use. A fee of $1 will be charged for materials supplied. Five credits. Spring, Daily 9. Blanch

202. Advanced Farm Management. Designed primarily to give students advanced training and experience in farm management. Prerequisite, Agricultural Economics 102. A fee of $1 will be charged for materials supplied. Three credits. Spring, M. F. 3-5. Blanch

206. Land Appraisal and Classification. A basic course in land appraisal and economic classification of land. Two credits. Spring, T. Th. 3-5. Blanch

Marketing and Prices


113a. Farm Cooperatives. A course in principles underlying the organization, operation and management of cooperative sales, purchasing and service associations. Three credits. Spring, M. W. F. 1. Thomas

113b. Analysis of Farm Cooperatives. For students who desire detailed work in organization and management of cooperatives. Prerequisite, Agricultural Economics 113a. A fee of $1 will be charged for materials supplied. Two credits. Spring, Th. 1-3. Thomas

114. Marketing Fruits and Vegetables. The production and marketing factors as they relate to the marketing of fruits and vegetables with special reference to Utah conditions. Three credits. Fall, M. W. F. 10. Staff

116. Marketing Livestock and Livestock Products. The production and marketing factors as they relate to the marketing of livestock and livestock products with special reference to Utah conditions. A fee of $1 will be charged for materials supplied. (Not given 1946-47.) Staff

120. Agricultural Prices. The relationship between agricultural and non-agricultural prices and income, together with the state and national agricultural outlook reports, will be given consideration. Three credits. Winter, M. W. F. 11. Thomas

121. Price Analysis. A study of statistical and other methods used in analyzing prices and other economic data. A fee of $1 will be charged for materials supplied. Three credits. Spring, M. W. F. 10. Staff

Special Graduate Courses

210. Research Methods in Agricultural Economics. A fee of $1 will be charged for materials supplied. Three credits. Spring, T. Th. 3-5. Blanch

214. Research in Agricultural Economics. Thesis. Any quarter. Time and credit arranged. Staff

215. Special Problems in Agricultural Economics. Any quarter. Time and credit arranged. Staff
Business Administration

(Including Accounting and Merchandising)

P. E. Peterson, Professor Emeritus; V. D. Gardner, W. L. Wanlass, Professors; L. Mark Neuberger, Associate Professor; Ina Doty, Clara P. West, Assistant Professors; ..................... Instructor.

Students majoring in the Department of Business Administration and Accounting may concentrate in the fields of Accounting, Finance, Management, Merchandising, and Secretarial Science. Students are advised to select from the courses listed below to complete their major and technical subjects according to their field of concentration. (Students majoring in the field of Secretarial Science should register under the advice of the Instructional Staff for Secretarial Science.)

RECOMMENDED COURSES FOR MAJOR AND SPECIAL GROUPS IN BUSINESS ADMINISTRATION

<table>
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<tr>
<th>Dept. No.</th>
<th>TITLe Of Course</th>
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<tr>
<td>Econ. 51</td>
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<td>Economic Dev. of U. S.</td>
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<td>Problems of Small Business</td>
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SCHOOL OF COMMERCE

Senior Year

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Note: Inasmuch as some of the above courses are taught only every other year, the student is not required to take the courses in the year indicated. However, the general outline should be followed whenever possible.

Special Offerings for Returning Veterans Who Are Not Candidates for Degrees

For capable, mature persons whose education has been interrupted by the war and who want maximum professional training in a minimum of time, two two-year courses in addition to the one in Secretarial Science have been organized in the School of Commerce. These courses minimize liberal course offerings and concentrate upon vocational and professional courses. One gives training in merchandising and the other in accounting. Only those students who know definitely that they will not seek a degree should pursue these courses and then only after consultations with the head of the department. A special course in problems of small business is included.

ACCOUNTING

1. 2. Introductory Accounting. The purpose of this course is to present the basic principles of accounting in the form of lectures, questions, problems and practice sets which require application of the theory advanced. Principles and techniques learned here will be useful as a basis for further study of accounting and as an aid in the understanding of the more common problems of business. Technique will be emphasized. Five credits each quarter. B.A. 1. Fall, M. W. F. 11; Lab., T. Th. 2-5; Winter, M. W. F. 8; Lab., T. Th. 2-5; B.A. 2, Spring, M. W. F. 11; Lab., T. Th. 2-5. 

Burrough’s Calculator. (See Secretarial Science 94.)

Commercial and Bank Posting. (See Secretarial Science 98.)

Mathematics for Business and Accounting Students. (See Math. 30.)

Mathematics of Investment. (See Math. 60.)

100. Accounting for Non-Commercial Students. A brief course in Accounting necessary to meet the needs of students in the School of Engineering, School of Agriculture, School of Home Economics, School of Forestry, and other non-commercial students. Three credits. Winter, M. W. F. 8. Gardner

101, 102, 103. Problems in Accounting Principles. A basic course in the fundamental technique and principles of accounting. To acquire a working knowledge of accounting as it serves the business executive is the primary aim of this course. It should prove a valuable study not only to those students who

*Urgently recommended.
aspire to a career in accounting, but also to teachers, lawyers, engineers and farmers. Interpretation and use of accounting as a tool of management is emphasized. Since facility in analysis can be acquired only through abundant practice, a variety of problems and home assignments will be provided. In the Spring Quarter considerable attention will be given to a study of typical C.P.A. problems. Graduate credit may be allowed upon the completion of some additional work. Three credits each quarter. Fall, Winter and Spring, M. W. F. 9.


120, 121, 122. Auditing Theory and Practice. A study of auditing principles and procedures. It is the aim of this course to give the student a practical knowledge of auditing. Prerequisites: A good working knowledge of accounting principles and techniques. Three credits each quarter. Fall, Winter, and Spring, M. W. F. 10.

124, 125, 126. Accounting Seminar. One credit each quarter. Th. 11.

127. Income Tax Accounting. A careful study will be made of current Federal and State Income Tax Laws. Practical problems in the preparation of Income tax returns will be given. Three credits. Fall, M. W. F. 11. (Not given 1946-47.)

129. Governmental Accounting. A study of the basic principles underlying the treatment of public and governmental accounts. Typical topics for study are: Statutory funds, budgets, trust funds, and preparation of financial reports. Three credits. Fall, M. W. F. 11.

BUSINESS ADMINISTRATION

Lettering and Commercial Art. (See Art 110.).

20. Problems of Small Business. A general survey of the problems encountered in starting a small business will be made. Consideration is given problems encountered before operations are started, such as selecting the right type of business, form of business, permits, licenses, choosing a location, credit and financing. In addition, the problems and details of actual operating procedures such as accounting controls, insurance, taxes, buying and selling will be considered in relation to various types of small business operations. Designed to aid the man just entering business. Five credits. Fall Quarter, Daily 8.

25. Introductory Business Administration. An introductory course in the fundamentals of business administration. It is intended that this course shall furnish the student with a background for the study of the more complex problems of business. Not open to freshmen. Lectures and reports. Five Credits. Fall, Daily 9.

28. Business Finance. This course treats of the structure of the corporate enterprise; providing for a new company; expansion of existing companies; recapitalization and reorganization of the corporation. Financial and operating ratios will be discussed. Proper financial plans and methods of marketing securities will also be considered. Open to qualified sophomores. Prerequisites: Econ. 51, 52, or equivalent, B. A. 1, 2. Five credits. Spring, Daily 8.

30M. Business Mathematics. For students in Business Administration. Three credits. Fall, M. W. F. 2; Winter, M. W. F. 10. West and Staff

Business Communications. (See Secretarial Science 30.)

Commercial Art and Posters. (See Art 31.)

Color. (See Art 32.)
Psychology of Business and Industry. (See Psychology 54.)

55. Introduction to Personnel Administration. A critical analysis of the problems of labor management which confront the manager of a business enterprise and of policies and methods of dealing effectively with these problems. Three credits. Spring, M. W. F. 8. Staff

Mathematics of Investment. (See Math. 60.) Urged for all accounting and business administration majors.

Indexing and Filing. (See Secretarial Science 65.)

Elementary Statistical Methods. (See Math. 110 or 111.) Required of all accounting and business administration majors.

130. Problems in Investment. With concrete cases used as a basis of discussion, the varying investment needs of different classes of people are studied in the first part of the course. In the second part, attention is given to different types of investment houses. In the third, types of investment securities are analyzed. Five credits. Winter, Daily 9. Gardner

Business Statistics. (See Economics 131, 132.)

133. Industrial Management Problems. Selected cases will be taken up for study and report. Problems in industrial location; on choice of site; on buildings and layouts; on selection, purchase, and arrangement of equipment; on purchasing and stores; on organization; on industrial research; on labor relations and on problems in managerial control. Prerequisite, B.A. 25. Three credits. Fall, M. 1, T. Th. 8. Gardner

134. Interpretation of Financial Statements. This course aims to give experience in the use of accounting data for evaluating management, and determining the conditions of enterprises in which one may become interested. The course will cover: (1) the interpretation of balance sheets, of operating statements, and the changes between successive statements; (2) the validity of the accounting principles according to which the available information was compiled; (3) the adequacy of the information furnished as a basis for proper judgment of the enterprise; and (4) the financial and managerial significance of the data of special interest to investors, public and private accountants, credit men and teachers. Five credits. Winter, Daily 2. Gardner

135, 136. Budgets. The organization and practical application of the budget in modern business. Particular emphasis is given the managerial aspects of budgets as an instrument of control. Practical problems in the formulation and execution of business budgets are provided. Three credits each quarter. Winter and Spring, M. W. F. 11. Peterson

137. Business and Professional Ethics. After a general survey of the science of ethics, special consideration will be given to those principles of professional conduct which are rapidly being introduced into modern business. The work of trade associations and professional organizations will be critically analyzed. Two credits. Wanlass

Risk and Risk Bearing. (See Economics 139.)

140. Insurance. Studied primarily from the standpoint of the consumer of insurance services. Among the topics treated are: types of life and property insurance contracts, nature and uses of life and property insurance, life insurance as an investment, and the organization, management and government supervision over insurance companies. Attention will also be given to the findings of the Temporary National Economic Committee in its study of the life insurance industry. Three credits. (Not given 1946-47.) Staff

141. Real Estate. This course is designed for those who will be considering the purchase of real estate and of securities based upon real estate, and as an introduction to the general field of real estate contracts, forms, and principles. Recent Federal housing legislation will be analyzed. Three credits. (Not given 1946-47.) Staff
149. Business Policy. This is a co-ordinating course aimed to develop perspective and judgment and facility in solving business problems. Problems will be discussed in production, distribution, personnel, finance, control, legal and ethical aspects of business. Required of all majors in Business Administration. Five credits. Spring, Daily 9.  
Gardner  
Office Management. (See Secretarial Science 175.)  
190. Seminar in Business Education. (See Secretarial Science 190.)  
191. Business Administration Seminar. Special reports and group discussion on current developments in business will be made. Open only to qualified juniors and seniors. One credit. Any quarter. Arranged.  
Staff  
MERCHANDISING  
62. Principles of Marketing. (See Ag. Econ. 62.)  
63. Salesmanship. The history, development and opportunities in sales work will be covered. The necessity and methods of securing proper preparation for sales work in order to meet the problems encountered in both direct selling and retail selling will be analyzed. The principles of preparing for interviews, proper presentation, gaining favorable attention, arousing the desire to buy, meeting objections, and creating acceptance will be studied. For those who desire, special projects can be carried out in relation to a particular field or type of selling. Lectures and assigned cases. Three credits. Spring, M. 2; T. Th. 9.  
Staff  
151, 152. Problems in Merchandising. The aim of this course is to present by means of carefully selected cases the manager's merchandising problems. Methods of marketing merchandise; selection of channels of distribution for consumer and industrial goods; sales organization and control, advertising and sales promotion; stock-turn, price policies. Three credits each quarter. Fall, Winter, M. W. F. 2.  
Staff  
154. Purchasing. This course involves a study of the significance of purchasing as a major activity in modern business. Consideration is given to organization, policies and control of the procurement function. Lectures and problems. Four credits. Fall, M. T. Th. 9.  
Staff  
156. Principles of Advertising. Intended to give a viewpoint to those who as business executives will direct publicity programs. The course includes study of the structure of advertisements, the appeals used in the preparation of advertisements for different products, the choice of media, consumer research and the work of advertising departments and agencies. Actual cases will be studied and analyzed to lead the student to judge the possibilities of advertising as a sales tool for various products and firms. Selected reading and cases. Five credits. Winter Quarter, Daily 10.  
Staff  
160. Sales Management. This course aims to give a broad view of the important phases of sales administration, planning and execution as applied to manufacturing and wholesale concerns. It deals specifically with the structure and functioning of the sales organization and the correlation of its activities with those of the production and other departments of the business enterprise. Specific attention is given to such topics as: marketing policies, sales planning, sales branches, selection and training of sales force, control of sales operations, sales budgets, volume, margins and profits. Five credits. Spring, Daily 10.  
Staff  
161, 162, 163. Problems in Retail Distribution. For students who wish to gain an understanding of the marketing field from the viewpoint of the retail distributor. The problems given major attention are: types of retail institutions, accounting and statistics, location, store layout, merchandise classification, service policies, pricing, brand policies, buying, merchandise control, advertising and sales promotion, general organization and administrative policies. Selected reading and cases. Four credits each quarter. Fall, Winter, Spring, M. W. Th. F. 11.  
Staff
164. Credit Administration. A study is made of the nature and functions of credit; forms of credit instruments; sources of credit information, organization and management of credit operating functions; technical and legal aspects of collections; credit and collection control. Four credits. (Not given 1946-47.)

Economics

W. L. Wanlass, V. D. Gardner, Professors; E. B. Murray, L. Mark Neuberger, Associate Professors; L. J. Arrington, Assistant Professor.

See pages 43 and 44 for courses that may satisfy group requirements.

Students majoring in this Department should include the following senior college courses in either the major or related work. Economics 106, 107a-b 125, 131, 135, 140, 147, 155, 165, 166, 171, 174, 180, 181, 182, and 211; Agricultural Economics 113a; Business Administration 101 and 102; Political Science 105, 106, 107, 108 and 116.

27. Economic Development of the United States. A survey of the historical development of economic factors. Particular attention will be given to the rise of the American labor movement, the development of the monetary and banking system, the evolution of commerce and communication, and the course of American industrial development from the small one-man business of early times to the super corporations of today. Two credits. Spring, T. Th. 10. Wanlass


51. General Economics. This course is for the general college student regardless of his field of specialization. The emphasis is on an understanding of the principles and institutions that underlie the operations of the economic system. Five credits. Fall, Winter and Spring; Daily 8, 9 and 10. Staff


106. History of Economic Doctrines. A critical study of the origin and the development of the economic theories of the leading thinkers in the leading nations of the world from 1760 to the present time. Three credits. Fall, M. W. F. 10. Wanlass

107a, b. Intermediate Economic Theory. A critical analysis of present day economic theories of value, distribution, and related subjects. This course must be taken by all students majoring in the departments of Business Administration, Agricultural Economics, and Economics. Prerequisites, Econ. 51, 52, or Ag. Econ. 53A, 53B. Three credits each quarter. Winter and Spring, M. W. F. 10. Wanlass

125. Labor Economics. The emphasis is on the theory and practice of collective bargaining. Special attention is given to recent legislation that has promoted the growth of organized labor. Current issues in industrial relations are critically analyzed. Three credits. Fall, M. W. F. 11. Murray

131, 132. Business Statistics. Application of statistical methods to problems of business with attention to graphs, analysis of time series, interpretation of index numbers and the statistics of particular industries and business in general. Prerequisites: Math. 111; Econ. 51 and 52. This course may be used for a major in Bus. Adm. Three credits each quarter. Winter and Spring, M. W. F. 9. Arrington
135. Transportation Economics. Emphasis is placed on railroad transportation in the United States. Some attention will be given to highway and airway transportation. The underlying economic principles will receive more attention than the practical phases of transportation. Special attention will be given to those problems that are peculiar to the intermountain section. Prerequisites, Econ. 51, 52. Three credits. Fall, M. W. F. 2. 

139. Risk and Risk Bearing. A study of the risks of economic life. Hedging, the short sale, futures and spot transactions and the produce and stock exchanges will be studied as well as the institution of insurance. Methods of shifting, reducing and assuming risks will be studied. Prerequisites, Econ. 51, 52. Three credits. Spring, M. W. F. 11. 

140. International Economic Relations. Special attention will be given to the basic economic relationships existing between the industrial nations of the world, international commerce, tariffs, and trade restrictions, international debt and finance, and various means of promoting progress on a basis of sound economics. Prerequisites, Econ. 51, 52. Two credits. Fall, T. Th. 10. 

141. Postwar Economic Problems. This special course is offered to provide students an opportunity to consider the problems that will confront this country and the world when the war is over. Attention will be given to such matters as demobilization, employment, resumption, of peace-time production, public-work programs, price controls, and the revival of international trade. Open to all upper division students. No prerequisites. Two credits. (Not given in 1946-47.) 

144. Economics of Consumption. There is an economics of consumption that is quite as important as the economics of production. This course deals with personal and group expenditures, standards of living, budgets, variations in consumption, etc. Two credits. Winter, T. Th. 10. 

147. Social Security. This course will survey the main divisions of social security legislation; these divisions are workmen's compensation, legal minimum wage, regulation of hours, unemployment compensation, old age insurance, family wage systems, and health insurance. Prerequisites, one course in Economics and one in Political Science. Three credits. Spring M. W. F. 11. 

150. Types of Economic Organization. A study of the various forms of economic organization that have been proposed, including some of the Utopias, Marxian socialism, Fascism, National Socialism, the Single Tax, Consumer's Cooperatives, Syndicalism, Guild-Socialism, Communism, and Capitalism. Three credits. Spring, M. W. F. 2. 


165. Money, Credit and Prices. The structure and operations of money and financial institutions. Special attention given to bimetallism, the gold standard, the money market and the relation of money and credit to prices. Prerequisites, Econ. 51, 52. Three credits. Fall, M. W. F. 9. 

166. Banking. The functions and operation of such financial institutions as commercial banks, savings banks, and trust companies will be studied critically. This will be followed by an historical treatment of banking in the United States and a survey of European and Canadian banking in comparison with the Federal Reserve System. Prerequisites, Econ. 51, 52, and 165. Three credits. Winter, M. W. F. 9.
171. Business Cycles. A study in the economics of cyclical fluctuations. A critical examination is made of the more significant theories which have been offered in explanation of the cycle. Problems of prediction and control are examined. The history of business cycles is studied. Prerequisites, Econ. 2, 52. Three credits. (Not given 1946-47.)


Arrington

180, 181, 182. Current Economic Problems. (Economics Seminar.) A reading and research course designed for junior, senior and graduate students who are majoring in economics and related subjects. Special reports on current problems and literature will be made. Required of students graduating in economics. Open only to seniors and graduates. One credit each quarter. Fall, Winter, and Spring, Th. 11.

Wanlass

200. Research in Economics. Special investigations in problems in economics may be carried on by senior and graduate students. Credit will be granted according to work done. Any quarter. Time arranged.

Wanlass

205. Graduate Seminar in Monetary and Banking Theory. The relation of monetary and banking theories to the problems posed by current world difficulties will be examined in some detail. Open to graduate students and seniors with adequate preparation. Two credits. Time arranged.

Murray

206. Graduate Seminar in Fiscal and Tax Problems. The problems of depression and emergency financing will be considered and attention will be focused upon the particular problems which arise out of the war-defense effort. Two credits. Time arranged.

Wanlass

207. Graduate Seminar on Monopoly and Combination. The relation between our historical individualistic society and the need for efficient production are to be analyzed. Interlocking world cartels and their significance will also be considered. Two credits.

Arrington

209. Graduate Seminar. A course designed to acquaint students with methods of research in the field of economics. A survey of the literature of economic research and practice in the carrying forward of research projects. Prerequisite, permission of instructor. Two credits.

Wanlass

211. Graduate Seminar. Same as Economics 209, except that emphasis will be placed upon a study of bibliographical materials in the field of economics and a study of economic literature. Prerequisite, permission of instructor. Two credits.

Murray

Political Science

J. D. DAINES, Professor Emeritus; M. R. MERRILL, ASA BULLEN, Professors; FRANK H. JONAS, Assistant Professor.

See pages 43 and 44 for courses that may satisfy group requirements.

Students majoring in this department are expected to have their course schedule approved by the Head of the department for at least six quarters prior to graduation. Exceptions may be made by the departmental faculty.

1. Government and the Individual. This course introduces the student into the political world of American democracy. Attention is given to an examination of totalitarian governments and the philosophies of fascism and communism which form the theoretical bases of these regimes. Democracy as practiced in the United States and Great Britain is contrasted with these systems. Five credits. Fall, Daily 8.

Merrill
10. American National Government. This is a course in which major attention is given to the national government. It is desirable but not required that it be taken before upper-division courses in Political Science. Five credits. 

11, 12, 13. Commercial Law. Political Science 11 is a general survey course and is intended as a course of general information to students outside the School of Commerce as well as an introductory course to students who take any additional Commercial Law courses. Political Science 12 and 13 are devoted to comprehensive study of the law of contracts and agency. Open to all students of sophomore standing or above. Three credits each quarter. 
Fall, Winter, and Spring, M. W. F. 8. 

15. American State and Local Government. In this course the emphasis is on state, municipal and county or rural governments. The course logically follows Political Science 10. Five Credits. Spring, Daily 9. 

20a, b. Government in the Modern World. This is a basic course in government designed particularly for students majoring in professional fields and particularly for students in the School of Engineering. Other students, however, may register for this course but students who register for Political Science 1 or 50 should not register for this course. Basic features of the American governmental system will be discussed in 20a, while other contemporary political systems will be discussed in 20b. Students may take either or both quarters without prejudice. Three credits each quarter. Fall and Winter, M. W. F. 9. 

50. Problems of Modern Society. Open to all students, though primarily for freshmen and sophomores. Covers the principal governmental policies of the present day with special emphasis on social, economic and political problems in the United States. No prerequisite. Five credits. Fall, Daily 9. 

70. Comparative European Governments. A comparative study of the various forms and kinds of governments that have developed in the modern world with primary attention directed toward Europe. Three credits. Spring, M. W. F. 9. 

75. Latin American Governments. The various Latin American governments will be discussed in this course. Attention will also be given to political and economic relations of the United States with the Latin American states. Three credits. Spring, M. W. F. 8. 

101. American Foreign Policy. The place of the United States in the family of nations as affected by our traditions, interests, and interpretations of international affairs. Three credits. Spring, M. W. F. 11. 

102. International Political Relations. Psychological, economic, racial, and other obstacles to international cooperation, as exemplified in recent events. The Treaty of Versailles; international law, the League of Nations; and present day world politics including the present proposals for world cooperation and government are discussed. Three credits. Winter, M. W. F. 11. 

103. Principles and Problems of Government. A general survey of public affairs and governmental action in the modern world. Designed primarily for upper division students majoring outside the field of the social sciences but who desire some competence in the analysis of modern politics. Three credits. 
Fall, M. W. F. 11. 

104, 105, 106, 107, 108. Commercial Law. Political Science 104 is a study of the law of negotiable instruments, while 105 and 106 include the study of the law of bailments, sales of personal property, partnerships, corporations, and bankruptcy. Political Science 107 and 108 include the study of the law of real property, including estates, deeds, conveyancing, abstracts of title, mortgages, wills. Political Science 105 and 106 alternate with Political Science 107 and 108. Political Science 107 and 108 will be given in 1946-47. Prerequisite. Political Science 11, 12, 13. Three credits each quarter. Fall, Winter, and Spring, T. Th. 8, M. 12.
110. Post-War Problems in International Relations. Examines the various proposals for a world organization to be formed at the close of World War II, contingent on the course and outcome of the war, together with an analysis of the various philosophies and systems of governments that conceivably might arise as a result of vast changes now evident in the world. Three credits. Spring, M. W. F. 10.

117a, b, c. American Political Thought. The development of American ideas concerning the State and political authority from colonial times to the present. The nature and purpose, methods of organizing and controlling political action in terms of historical and social origins; and applicability to modern problems. Two credits each quarter. Students may register for one, two or three quarters. Fall, T. Th. 10, Winter, T. Th. 10, Spring T. Th. 10.

124. Public Opinion and Propaganda. Open to upper division and graduate students, and to lower division students upon recommendation of the departmental instructors. Considers politics in its dynamic aspects. The nature of public opinion and the various concepts and techniques of propaganda in domestic and international relations employed by pressure groups, political parties and national states. No prerequisite. Three credits. Fall, M. W. F. 11.

125. Political Parties and Practical Politics. This is a basic course in the organization and practices of political parties as they have operated to the present time. Three credits. Winter, M. W. F. 8.


140. American Legislation. Organization and procedure of legislative bodies. Influences at work in and the character of the output of the national and state legislatures. The laboratory method of approach is used as far as is feasible. Parliamentary law is emphasized. Three credits. Winter, M. W. F. 11.

145a, b. History of Political Thought. Political Science 145a covers political theories and ideas from the Greek period to Martin Luther. Political Science 145b continues the study of political theories from Luther to 18th Century. Three credits each quarter. Students may take either or both quarters. Fall and Winter, M. W. F. 9.

150. Recent Political Thought. Political ideas and writers from the close of the 18th Century to the present, with a particular emphasis on analysis of the backgrounds of currently changing political concepts. Examination of contemporary political ideologies. Three credits. Spring, M. W. F. 8.

180, 181, 182. Current Political Problems. A series designed for upper division students. Students may take any quarter without the preceding quarter or quarters, with the consent of the instructor. Two credits each quarter. Fall, Winter, Spring, M. W. 1.

200. Research in Political Science. For senior and graduate students. Time and credit arranged.
Secretarial Science

V. D. Gardner, Professor; L. Mark Neuberger, Associate Professor; Iona Doty, Clara P. West, Assistant Professors.

Students majoring in Secretarial Science must complete the following courses in addition to the institutional requirements for graduation. Elementary shorthand and elementary typewriting are not required of students who have had the equivalent.

Curriculum in Secretarial Science for B. S. Degree

<table>
<thead>
<tr>
<th>Dept.</th>
<th>No.</th>
<th>Title of Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sec. Sci.</td>
<td>30</td>
<td>Business Communications</td>
<td>3</td>
</tr>
<tr>
<td>Sec. Sci.</td>
<td>65</td>
<td>Indexing and Filing</td>
<td>3</td>
</tr>
<tr>
<td>Sec. Sci.</td>
<td>75, 76, 77</td>
<td>Elementary Shorthand</td>
<td>9</td>
</tr>
<tr>
<td>Sec. Sci.</td>
<td>80, 81, 82</td>
<td>Intermediate Shorthand</td>
<td>9</td>
</tr>
<tr>
<td>Sec. Sci.</td>
<td>69, 70, 71</td>
<td>Transcription Practice</td>
<td>3</td>
</tr>
<tr>
<td>Sec. Sci.</td>
<td>86, 87, 88</td>
<td>Elementary Typewriting</td>
<td>3</td>
</tr>
<tr>
<td>Sec. Sci.</td>
<td>89, 90, 91</td>
<td>Advanced Business Typewriting</td>
<td>3</td>
</tr>
<tr>
<td>Sec. Sci.</td>
<td>94</td>
<td>Burroughs Calculator</td>
<td>2</td>
</tr>
<tr>
<td>Sec. Sci.</td>
<td>98</td>
<td>Commercial and Bank Posting</td>
<td>2</td>
</tr>
<tr>
<td>Math.</td>
<td>30</td>
<td>Mathematics 30</td>
<td>3</td>
</tr>
<tr>
<td>B. A.</td>
<td>1, 2</td>
<td>Introductory Accounting</td>
<td>10</td>
</tr>
<tr>
<td>B. A.</td>
<td>25</td>
<td>Introductory Business Administration</td>
<td>5</td>
</tr>
<tr>
<td>English</td>
<td>2</td>
<td>Mechanics of Writing</td>
<td>3</td>
</tr>
<tr>
<td>English</td>
<td>5</td>
<td>Scientific Vocabulary (or Foreign Language)</td>
<td>3</td>
</tr>
<tr>
<td>†Econ.</td>
<td>51</td>
<td>General Economics</td>
<td>5</td>
</tr>
<tr>
<td>†Econ.</td>
<td>52</td>
<td>Economic Problems</td>
<td>5</td>
</tr>
<tr>
<td>Sec. Sci.</td>
<td>170</td>
<td>Statistical Typewriting</td>
<td>2</td>
</tr>
<tr>
<td>Sec. Sci.</td>
<td>175</td>
<td>Office Management</td>
<td>3</td>
</tr>
<tr>
<td>Sec. Sci.</td>
<td>183, 184, 185</td>
<td>Advanced Speed Shorthand</td>
<td>9</td>
</tr>
<tr>
<td>Sec. Sci.</td>
<td>186, 187</td>
<td>Secretarial Science</td>
<td>6</td>
</tr>
<tr>
<td>†Sec. Sci.</td>
<td>179</td>
<td>Methods of Teaching Typewriting</td>
<td>3</td>
</tr>
<tr>
<td>†Sec. Sci.</td>
<td>180</td>
<td>Methods of Teaching Shorthand</td>
<td>3</td>
</tr>
<tr>
<td>Sec. Sci.</td>
<td>190</td>
<td>Seminar in Business Education</td>
<td>2</td>
</tr>
<tr>
<td>B. A.</td>
<td>101</td>
<td>Problems in Accounting Principles</td>
<td>3</td>
</tr>
<tr>
<td>B. A.</td>
<td>Elective</td>
<td>Business Administration (Senior College)</td>
<td>3</td>
</tr>
<tr>
<td>Econ.</td>
<td>Elective</td>
<td>Economics (Senior College)</td>
<td>3</td>
</tr>
<tr>
<td>Electives Electives (27 of which must be Senior College)</td>
<td>42</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students wishing a teaching certificate in Secretarial Science must add the following courses: Psychology 3 and 102a and b, Education 111, 113, 127, 129a, 129b, 114, 116, 145, and Physiology 145. See School of Education for additional requirements.

A two-year course is also offered in Secretarial Science for students who do not wish to qualify for a B.S. degree, but who wish to fit themselves for stenographic positions as quickly as possible.

Two-Year Secretarial Course

First Year

<table>
<thead>
<tr>
<th>Fall Courses Credits</th>
<th>Winter Courses Credits</th>
<th>Spring Courses Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol. Science 5</td>
<td>Accounting 1 6</td>
<td>Accounting 2 5</td>
</tr>
<tr>
<td>Mechanics of Writing 3</td>
<td>Calculator 94 2</td>
<td>Bus. Communications 3</td>
</tr>
<tr>
<td>El. Shorthand 3</td>
<td>El. Shorthand 3</td>
<td>Bank Posting 98 2</td>
</tr>
<tr>
<td>Typewriting 1</td>
<td>Typewriting 1</td>
<td>El. Shorthand 3</td>
</tr>
<tr>
<td>P. E. or M. S. 1</td>
<td>El. Psychology 5</td>
<td>Typewriting 1</td>
</tr>
<tr>
<td>Mathematics 30 3</td>
<td>P. E. or M. S. 1</td>
<td>P. E. or M. S. 1</td>
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</tbody>
</table>

Total 16 Total 17 Total 15

†These courses count toward filling the group requirements.
‡Required for a teaching certificate.
### Second Year

#### Fall

<table>
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<tr>
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<tr>
<td>Transcription Prac.</td>
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</tr>
<tr>
<td>Adv. Typewriting</td>
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</tr>
<tr>
<td>Bus. Administ'n 25</td>
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<tr>
<td>Indexing and Filing</td>
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<tr>
<td>Pol. Science 11</td>
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<td>P. E. or M. S.</td>
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#### Winter

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<tr>
<td>Transcription Prac.</td>
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<td>Adv. Typewriting</td>
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<tr>
<td>Economics 51</td>
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### Spring

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<td>3</td>
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<td>Transcription Prac.</td>
<td>1</td>
</tr>
<tr>
<td>Economics 52</td>
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<td><strong>Total</strong></td>
<td><strong>16</strong></td>
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</tbody>
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*69. Transcription Practice. Designed to develop skill and speed in the transcription of letters from shorthand notes. Students must be able to take dictation at not less than 60 words a minute and type at least 40 words a minute. One credit. Fall, T. Th. 12. Winter, M. W. 12. Doty


*71. Transcription Practice. Continuation of 70. One credit. Spring, T. Th. 12.

75. First Quarter Shorthand. Designed for students who have had no previous training in shorthand, and includes a study of the fundamentals of shorthand by the functional method. Emphasis will be placed on developing fluency in reading and writing from shorthand plates. Three credits. Fall, Daily 10. Winter, Daily 10.


77. Third Quarter Shorthand. Continuation of course 76. Practice will be given in new-matter dictation. Three credits. Fall, Daily 10. Spring, Daily 10.

80. Intermediate Shorthand. Designed for students who have had one year of shorthand and who are able to take dictation at 60 words a minute. It includes a review of the theory of Gregg shorthand and the development of new vocabulary and phrase writing. Students must be able to type at least 40 words a minute and must register for Transcription Practice 69. Three credits. Fall, M. W. F. 11. Winter, M. W. F. 2.


*Required of all who register for Intermediate Shorthand 80, 81, 82.
86. First Quarter Typewriting. For students who have had no previous training in typewriting. This course is designed to develop a thorough knowledge of the keyboard and to give practice in the use of the mechanical features of the typewriter. Special attention will be given to the development of typewriting for personal use. One credit. Fall, T. Th. 8, F. 12. Winter, T. Th. 8, F. 12. Spring, T. Th. 8, M. 1.

87. Second Quarter Typewriting. Continuation of 86. Attention is given to sentence and paragraph practice and to letter writing. One credit. Fall, T. Th. 2, W. 1. Winter, T. Th. 2, M. 1. Spring, T. Th. 2, F. 12

88. Third Quarter Typewriting. Continues with the advanced development of the features given in 86 and 87, and in addition includes tabulating. One credit. Winter, T. Th. 10. Spring, T. Th. 10.

89, 90, 91. Advanced Business Typewriting. Designed for students who have had one year of typewriting. Fall Quarter: Special attention will be given to advanced letter writing, telegrams, invoices and billing, and advanced tabulation. Winter Quarter: Advanced legal forms and manuscripts. Spring Quarter: Rough drafts, advanced secretarial problems, and the care of the machines. One Credit each quarter. Fall, Winter, Spring, T. Th. 9. Neuberger and Detty

94. Burroughs Calculator. Practice in addition, multiplication, subtraction, and division on the Burroughs calculating machine and the application of the machine to various business computations such as percentages, discounts, prorating, decimal equivalents, and constants. Two credits. Fall, M. 2-4, W. 2; Winter, M. 2-4, W. 2 or T. 2-4, Th. 2; Spring, M. 2-4, W. 2. Neuberger

98. Commercial and Bank Posting. Practice in the application of the Burroughs posting machine to bookkeeping procedure in commercial and financial institutions and banks. Two credits. Fall, Winter or Spring, M. or T. 3-5; Fall, M. T. or Th. 3-5; Winter, M. or W. 3-5; Spring, M. or Th. 3-5. Neuberger

170. Statistical Typewriting. For juniors and seniors majoring in Business Administration, Economics, and Secretarial Science. The application of the typewriter to statistical work. A great many reports are prepared by various departments in a business. In the main these reports are of a statistical nature. Principles will be studied and practice given in setting up charts, tables and reports. Prerequisites: Sec. Sc. 89, 90, and 91 or equivalent work. Two credits. Fall, T. Th. 10; W. 1. (Two additional hours arranged.) Neuberger

175. Office Management. Emphasis is placed on principles of office management, duties and responsibilities of the office manager; types of organization; methods of control; office arrangement and equipment; job analyses; selection, employment, and training of employees. Prerequisites, introductory accounting and general economics. Three credits. Fall, M. W. F. 8. Neuberger

*179. Methods of Teaching Typewriting. Recent developments and practices in the teaching of typewriting. The analysis of objectives, laws of learning, organization of materials, texts, standards of achievement, speed and accuracy will be considered. A course for those preparing to teach typewriting and for those engaged in teaching, who wish to render their teaching more effective. Three credits. (Not given 1946-47.) Neuberger

*180. The Teaching of Shorthand. The newer methods and trends in the teaching of shorthand, and observation and practice in the teaching of shorthand classes for those preparing to teach shorthand. Three credits. Fall. (Consult instructor before registering.) Arranged. West

183, 184, 185. Advanced Speed Course in Shorthand. Designed for students who have had at least two years of shorthand and are able to take dictation at not less than 100 words a minute. Special emphasis will be placed on increasing shorthand speed through speed phrases and reporting shortcuts. Practice will also be given in advanced transcription. Three credits each quarter. Fall, T. Th. F. 1; Winter and Spring, M. W. F. 1. West

*Either (but not both) of these courses may be used as an elective course in Education.
SCHOOL OF COMMERCE

186, 187. Secretarial Science. Designed to acquaint students with office routines and practices and to give them practice in the quantity production of transcripts and business papers. Attention will be given to office conduct and attitudes, personal qualities of a secretary, and the procuring of a position. Prerequisites: Two years of shorthand and typewriting, general economics, introductory accounting, and business communications. Three credits each quarter. Winter and Spring, M. W. F. 8. West

190. Seminar in Business Education. A reading and research course for junior and senior students majoring in Business Administration and Secretarial Science. Special reports on current Business Education problems and literature will be made. Two credits. Spring, T. Th. 8. Neuberger

Sociology

JOSEPH A. GEDDES, W. B. PRESTON, Professors; JOSEPH N. SYMONS, Associate Professor; CLAUD H. PRATT, HOWARD V. JESSOP, Instructors; CARMEN FREDRICKSON, Assistant.

Departmental Objectives:

1. To perform an integrative function. Scientific information on social living has gradually become segregated into separate disciplines known as the social sciences. Each of these sciences at times, and one of them as a normal responsibility, faces the task of integrating the contributions of the others. Sociology, because of the nature of its subject matter, has come to be looked upon generally as having major integrative responsibility. This responsibility is met by offering such courses as Modern Social Problems, Rural Sociology, and Courtship and Marriage.

2. To provide for students who become majors, and as many other future citizens as may be interested, the steadily accumulating, tested, basic information dealing with people and groups in relationship. The most basic of this information is found in Principles of Sociology.

3. To offer to majors and minors and others whose training warrants further information and experience, under supervision, in special fields pertaining to relationship. The fields selected for development by the Department have been chosen because of their importance to the people of the state, and particularly to future citizens. The fields are (1) General Sociology, including research, (2) Family Welfare, (3) Social Change, and Social Disorganization, (4) Rural Welfare, Community Life and Social Institutions.

A dominant purpose in providing the information indicated in 1 and 2 is to enable students to become socialized citizens; to aid them to make more satisfactory progress in personality development and to assist them to achieve balance in attitude, in participation and in philosophy of living.

4. Objectives in the Division of Social Work are practical in nature. The aim is to provide preparation for social service in the senior year and more advanced training in one year of graduate study. Students who take social work during the senior year and then take social-work positions may later continue their studies and secure the social work certificate or the masters degree. The aim includes also pre-professional training on the under-graduate level through which a knowledge of rural conditions is secured. This information includes studies of rural standards of living, rural housing, rural means of communication, rural taxation, agricultural prices, rural institutions, rural trends, etc.

Sociology 70 is prerequisite for all Upper Division courses in Sociology, except Sociology 160.

Nuclei courses about which the major and the special group courses should revolve are suggested, as follows:

General Sociology and Research—Sociology 70, 140, 153, 190, 191, 192, 193, 194, 195, 202, 207.
Family Welfare—Sociology 60, 160, 162.

Social Change and Social Disorganization—Sociology 52, 102, 154, 162, 170, 172, 207.


5. Social Change. An orientation course in the field of Sociology for freshmen. Social changes are studied in relation to their results. Adjustment to and management of change are considered. Five credits. Fall, Daily 11.

10. Rural Sociology. Attempts to provide a groundwork of information which will lead to enlightened rural citizenship and provide a constructive philosophy for living in the country. Concise digests of programs in 25 or more fields are made. Rural social psychology is given emphasis. Conditions in rural Utah are studied. Five credits. Fall, Daily 8. Spring M. W. F. 9. Geddes

40. Sociology for Nurses. Problems of group and social relationships which influence well-being and aid in regaining health are studied. Three credits. Fall, M. T. Th. 2.

52. The Crime Problem. This course is concerned with the broader aspects of crime as a serious contemporary problem. Such topics as the extent, nature, causes of, theories concerning, techniques for coping with, programs for prevention, etc., furnish the course content. Three credits. Fall, M. W. F. 9. Symons

60. Courtship and Marriage. A study of social and individual problems of mate selection, courtship and marriage with emphasis given to those factors which make for favorable selection. Three credits. Fall, Winter and Spring, M. W. F. 10.

70. Principles of Sociology. The foundations of Sociology are studied in order that a plan of social progress may be formulated. The problems of social origins, social structures, public opinion, social activities, social organization, and social evolution are carefully considered. Prerequisite for all Upper Division classes. Five credits. Fall, Daily 8, 10. Winter, Daily 8, 11. Spring, Daily 8, 11.

100. Educational Sociology. This course deals with the influence of the social processes and social changes on school curricula, objectives and teachers. It includes an appraisal of educational goals in the light of our present social needs. Three credits. Fall, T. Th. 11, W. 12.

102. Organized Crime. Criminal behavior is becoming more thoroughly organized. The professional offender finds himself after a time in a culture unique to him and his associates. The nature of this culture from early beginnings to the present will be treated. Three credits. Winter, M. W. F. 11. Symons

110. Utah Rural Social Problems. Problems dealing with recent population movements, migration, employment and specific rural organizations are selected for study and analysis. Three credits. Fall, M. W. F. 9. Geddes

Public Opinion. (See Political Science 124.)

140. Social Psychology. The influence of the "groups" in the formation of the "norms" of life and in exerting pressure on the personality is stressed. Five credits. Fall, Daily 8.

153. History of Social Thought. The emergence and development of social thought from early periods is traced to August Comte. From this point important developments in Europe and America are studied. Particular emphasis is given to the American field. Five credits. Spring, Daily 8. Symons

156. Social Institutions. Similarities and differences in the life histories of institutions as they emerge, grow and decline are appraised. Society’s efforts to keep institutions attuned to the objectives for which they were organized are observed. Three credits. Spring, M. W. F. 10. Staff


170. Juvenile Delinquency. The causes of delinquency are considered with the purpose of arriving at intelligent remedies. Various methods of home, social, and institutional treatment are studied; parental cooperation, personal supervision allied with probation and parole, institutional treatment, etc. Three credits. Winter, M. W. F. 10. Symons

172. Poverty and Dependency. A study is made of the extent of poverty, its causes, remedies now in use, and others which give promise. Social methods of caring for dependents are examined. Emphasis is placed on programs which look to prevention and to minimization as well as to adequate care. Three credits. Fall, M. W. F. 8. Staff

190, 191, 192, 193, 194, 195. Seminar in Sociology. One credit each quarter. Fall, Winter, and Spring. Time arranged. Six quarters required of majors in Sociology. Staff

201. Research in Sociology. For advanced students only. A project is organized and field work is carried on under supervision. Original studies are made. Prerequisite, Soc. 70; Math. 111 recommended. Fall, Winter, Spring. Time arranged. Staff


207. Graduate Seminar. Short subjects falling within the field of Sociology and pertinent to it but not available in regular courses are selected for study. Winter, M. 2-4. Staff

220. Rural Organization. Social organization in small towns, villages and open country. Required for students training for rural social work. Two credits. Spring, T. Th. 9. Geddes

**Social Work**

**Division of Social Work.**

**JOSEPH A. GEDDES, Director**

An integrated five-year plan of study is offered which includes an undergraduate major in social work and either a certificate in Social Work or a Master of Science degree on successful completion of one year of graduate work. For the Master’s degree a thesis is required.

A major in social work at the college may be secured through completion of: (1) 19 credits of professional social work courses during the Senior year, and (2) through completion during the Freshman, Sophomore and Junior years of:

1. 6 credits in Physical Education or Military Science
2. Group requirements
3. Background courses in the social sciences and in related fields to include:
   - 8 credits in Sociology
   - 8 credits in Political Science
   - 8 credits in Psychology
8 credits in Economics or Agric. Economics
8 credits in Public Health and Home Economics
5 credits in History

Specific courses which should be associated with the undergraduate professional work courses and which should be taken during the Freshman, Sophomore, Junior and Senior years are:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tr>
<td>Psy. 103a</td>
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<tr>
<td>Foods 103b</td>
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<td>Ag. Econ. 103a</td>
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<tr>
<td>Soc. 103b</td>
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<td>Math. 110</td>
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<td>S. W. 145</td>
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<td>Econ. 147</td>
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<td>Soc. 160</td>
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<td>Soc. 162</td>
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<td>Soc. 170</td>
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Required professional social work courses for a major in social work are:

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<td>S.W. 140</td>
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<tr>
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<td>S.W. 177</td>
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<td>S.W. 190</td>
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Professional courses open to graduate students working for the Social Work certificate or the M.S. degree in Social Work are:

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<tr>
<td>S.W. 295-296</td>
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</table>


110. Field Work I. Field work centers will be maintained in selected public and private agencies and supervision will be provided under college direction. S. W. 100 should precede or be taken concurrently. Two, three or four credits. Fall and Winter, T. Th. 9-5. Jessep

140. Community Organization. The growth of the community movement is traced. The organization of community forces into organized agencies and the development of communal programs is emphasized. Disorganizational factors are isolated. Three credits. Spring, M. W. F. 8. Geddes

145. Mental Hygiene. Mental and emotional conflicts and maladjustments resulting from faulty social conditioning are the major concern of the course. Parent-child relationships, the school and the child, the play-group, the playing of a role and the obtaining of status, etc., are given consideration. Three credits. Winter, M. W. F. 10. Prett
173. The Field of Social Work. A survey of the development of the various fields of social work. This course is designed for students entering the fields of teaching, home demonstration, county agents' work, as well as social work. Two credits. Winter. Time arranged. 

Pratt


Pratt

190. Methods of Social Research. A study of present methods of carrying on social research. Exploration, the interview, the survey, the diary, the letter, the life history, interpretation of data are stressed. Prerequisite, Sociology 70; three credits. Spring. Time arranged. 

Geddes


Pratt

211. Field Work II. A continuation of Field Work I. Two or four credits. Winter and Spring, T. Th. 9-5. 

Jessop

212. Field Work III. A continuation of Field Work II. S.W. 100, 201 are prerequisites. Two or four credits. Spring, T. Th. 9-5. 

Staff

214. Field Work in Group Work. A limited amount of leadership training and observation of groups in action is available to students who have completed Social Work 275. Two credits. Spring. Time arranged. 

Staff

222. Rural Public Welfare. A study of social work problems and methods as influenced by rural conditions. Two credits. Spring, W. 3-5. 

Staff

230. Social Psychiatry. Emotional and intellectual factors in adjustment problems; diagnosis of mental and nervous disorders; the interrelation of physical, emotional, mental and environmental factors are stressed. Three credits. Fall, W. 11 and 1, F. 11. 

Staff


Pratt

260. Medical Information. A study of diseases most frequently encountered in social work. The interrelations of disease and social conditions are appraised. Medical resources are considered. Open to social work students in the senior year. Three credits. Fall. Time arranged. 

Preston


Jessop


Jessop


Pratt

276. Contemporary Social Work Literature. This course attempts to review the current contributions to the various fields of social work literature as well as to acquaint the student with the character of the periodical literature that has been published during the previous year. Two credits. Winter, M. W. 9. 

Pratt


Staff
SCHOOL OF EDUCATION

E. A. JACOBSEN, Dean

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General Information

The School of Education, as an administrative unit of the College, comprises the departments of Art, Music, Psychology, Physical Education, and Education. A major function of these departments is the preparation of teachers for the elementary and secondary schools. Each department, in addition, offers courses contributing to general education and courses designed to supplement the major work of other departments of the College.

The Bachelor of Science degree with a major in Education is designed primarily for those students who are preparing to teach in elementary schools or for those who desire to meet requirements for administrative or supervisory credentials. Although provision is made for a major in secondary education, students preparing to teach in the secondary schools will usually find it advisable to take their Bachelor's degree in the particular school in which their major work is chosen. Arrangements have been made with the different schools of the College to provide the candidates for their respective degrees with the necessary professional courses to qualify them to teach in these fields. Requirements for a teaching major are set forth by the various departments.

The School of Education stands firmly on the principle that teachers must not only be liberally educated but be thoroughly prepared in the subjects which they are to teach.

For teachers in junior and senior high schools it is intended that the student shall be prepared to teach in two high school teaching fields. The student's mastery of essential subject matter in the teaching field, rather than the credit hours, should operate in determining subject matter proficiency. Teaching fields should be chosen by the student on the basis of his individual abilities and interests and also in the light of available information concerning the demands for beginning teachers and the supply in the respective fields. The curriculum in professional education and psychology aims to impart to prospective teachers the meaning of education in its relation to desirable social objectives, the organization and administration of schools in relation to the needs of the learner and to social aims, an understanding of the nature and needs of the learner and the learning process, and by means of certain technical courses in education, to develop skills in the art of teaching.

The sequence of professional courses in Psychology and Education is such that it is necessary to study in these fields before the final year. A detailed plan of study is not outlined or prescribed. The student who plans to prepare for teaching will usually find it advantageous to devote the first two years to securing a well-balanced general education, giving some attention to course prerequisite to advanced study. During these years some emphasis may also be placed in the field of specialization. The third and fourth years should be devoted primarily to concentration in the major field of study and to professional subjects in Psychology and Education.

For requirements for admission, certification, and graduation, see page 39 to 48.

TEACHER PLACEMENT BUREAU
MRS. VERA A. CHRISTENSEN, Secretary.

The College is fundamentally interested in placing qualified teachers in teaching positions. To accomplish this purpose the Teacher Placement Bureau has been organized in connection with the Department of Education. All students who qualify for teaching certificates are expected and urged to register with the Placement Bureau to facilitate the compilation of the proper credentials to be used in placement for the current and future years.

Candidates for teaching positions should join the Placement Bureau in the early part of the winter quarter or not later than the first week of the spring quarter.
A teacher's certificate is a credential issued by the State. The State Department of Education prescribes the courses required for certification, but the College gives the courses and then certifies to the State when the applicants for certification have completed the requirements.

A copy of the list of courses required may be had from the secretary of the Education Department, Room M277. The requirements are also stated in the introduction to the division of Elementary and Secondary education in this catalog.

It is highly important to the student desiring to qualify for teaching that he contact the chairman of the Certification Committee during the last quarter of the sophomore year or at the beginning of the junior year for information regarding certification.

### Art

Calvin Fletcher, Professor; H. R. Reynolds, Associate Professor; Jessie Larsen, Everett Thorpe, Assistant Professors.

The Art department is primarily a service department correlating with Home Economics, Industrial and Mechanic Arts, Commerce and other major divisions of the College as well as with the various departments of the School of Education. Unless otherwise stated its courses are adapted to students without special talent or interest in the field as well as to the needs of the talented. In addition, however, it is adequately prepared to offer major and minor work as listed below.

Art is recognized as one of the great divisions of the humanities which are so essential to the making of the right kind of leaders in a world of overbalanced technology. Art 1, 2, 3, 22, 26, 32 and 33 may be used to satisfy the Junior College requirements in the Language and Arts group.

**Majors:**

Teaching majors in secondary Art must complete Art 1, 2, 3, 31, 32, 133, 122, 123, 124, 125, 126, 127, 151, 110 (four credits), 104 (ten credits), 106 (three credits), 114 (four credits), 112 or 113 (three credits).

Teaching majors for elementary grade supervision or special teaching of drawing, handwork, and creative expression will complete Art 1, 2, 3, 31, 123, 124, 125, 127, 152, 110 (2 cr.), 104a and b (10 cr.), 106 (8 cr.), 114 (8 cr. in at least 4 lines). Art 20 (2 cr.), Art 112 (2 cr.).

**Majors** may specialize in the following fields on these conditions:

They must show aptitude for the work and submit at least 30 hours of credit in the field in addition to Art 1, 2, 3, 123, 126, 127, 124, and 125. Fields open for election are Commercial Art, Fashion Drawing and Illustration, Painting, Sculpture, General Illustration, Interior Decoration, Industrial Design, Hobby Craft Direction, and Occupational Therapy.

**Minors:**

Education majors in secondary education desiring an art teaching minor should take Art 1, 2, 151, 32, 104 (five credits), 123, 126, 127, 124 and 125b.

Textile majors desiring a teaching minor in Art should take Art 104c, 151, 113 or 114, 122 and 127 or equivalent.

Industrial Arts majors wishing a teaching minor in Art should take Art 32, 133, 114, 151, 127, and 124 or equivalent.

General teaching minors in Art on the secondary level with majors in English, Music, Physical Education, History, etc., should take Art 133, 126, 1, 151, 104a and b (two credits in each), and 106 (two credits).
Majors in Elementary Education who elect Art as a specialization field should take Art 1, 2, 125a, 31, 114 (three credits), 133, 126, 152, 124, and 104 or b (four credits).

Two-year full time specialization or trade courses in Show Card and Sign Writing, Costume and Commercial Illustration, Painting and Sculpture are also available. Students wishing such courses should consult the head of the department.


Art 2. Design and its Application. Designed to give students opportunity to develop skill in application of design principles to elementary craft problems as used in everyday life. Students study simple constructive and decorative ideas adapted to their individual needs whether for home or school and on the level of their previous experience. Side by side many types of handicraft are pursued. Sections are limited to 15 students. Instruction is adapted to the needs of homemakers and teachers of handiwork on any level. Prerequisite, Art 1 or equivalent. Three credits. Fall, Sec. 1, Lecture, T. 2; Lab. T. Th. 2-5, Room M330-B, Thorpe. Winter, Sec. 2, Lecture, M. 9; Lab. M. W. F. 9 and 10, Room 330-C, Reynolds. Winter, Sec. 3, Lecture, M. 10; Lab. M. W. F. 10 and 11, Room 330-E, Larsen. Winter, Sec. 4, Lecture T. 2; Lab. T. 3-5, Th. 2-5, Room M330-B, Thorpe. Spring, Sec. 1, Lecture, M. 8; Lab. M. W. F. 8 and 9, Room M330-E, Larsen. Sec. 2, Lecture, T. 2; Lab., T. Th. 24, Thorpe.

3. Art Understanding and Appreciation. Designed to give an understanding of the basic principles underlying architecture, landscape gardening, interior decoration, sculpture, painting, the art of the book, pottery and other things met in everyday life today. The aim is to increase enjoyment through the sense of sight. Three credits. Fall, M. W. F. 8. Winter, M. W. F. 8. Spring, M. W. F. 8, Room 330-C. Reynolds

22 or 122. Home Planning, Construction and Design. House design, planning, garden planning, building construction, heating, lighting, plumbing, etc. How to select the type of house and supervise the construction and equipping of the home. Three credits. Winter, M. W. F. 12. Fletcher

23 or 123. Interior Decoration. Design and color as applied to the furnishing and decoration of a home. Selection and styles in furniture, drapery, rugs, and all other problems relating to the creation of interiors of character and beauty will be considered. Prerequisites: Art 1 and 2. Five credits. Fall, M. W. F. T. W. Th. 1; Lab., F. 2-5. Spring, M. T. Th. F. 10; Lab., W. 2-5. Room 330-C. Larsen

26 or 126. History and Appreciation of Architecture. The characteristics of the great styles of building and the development of a state for good architecture. Adapted to the needs of the homemaker, teacher, artist, or layman. Three credits. Winter, M. W. F. 11, Room 330-C. (Not given 1946-7.) Reynolds

31. Commercial Art and Posters. Design in advertising display, layout, lettering, etc. Three credits. Fall, Lecture M. 2; Lab., M. W. F. 2-5. Room 330-B, Thorpe

32. Color. Color as used in stage lighting, painting, design, and everyday life. Its physical, psychological, and artistic phases are correlated. Suited to the business man, layman, dramatist, artist, teacher, and painter alike. Three credits. Spring, M. W. F. 9. Reynolds
33 or 133. History and Appreciation of Painting. Designed for the layman desiring to extend his knowledge of the great painters as well as for the teachers of art and artists. Three credits. Winter, M. W. F. 11. 

34. Art for Young Children. Designed to meet the needs of child development majors, mothers in the home, kindergarten and first grade teachers. Two credits. Winter, T. Th. 12. Room 330-C. 


124. Perspective. The principles of cylindrical, parallel, oblique and modernistic perspective as used in the arts will be covered. Special attention will be given to rendering in pencil and pen and ink. Three credits. Room 330-E. Spring, M. W. F. 9. (Not given 1946-7.) 

125. Anatomy and Figure Drawing. The anatomy and construction of the human figure with emphasis on superficial anatomy. Adapted to the needs of fashion artists, sculptors, painters, illustrators, commercial artists, and teachers. Three credits. May be taken without the lab., which is separate. Spring, M. W. F. 11. 

125a. Laboratory in Figure Drawing. Spring, T. Th. 8-11. Two credits. 

127. Advanced Design. Advanced problems in design for crafts, industrial art, and mural decoration. Adapted to the needs of the teacher of applied art, textiles and industrial are on the secondary school level. Three credits. (Not given 1946-7.) 

129. Photography. Basic course for all who desire to do more efficient and artistic work. Three credits. Fall, Winter, and Spring, T. Th. 2-5. Room 131. 


151. Art Education for High School. Methods of teaching art on the secondary school level. How to motivate the work in drawing, painting, design and crafts. Arrangement of the shop, studio, selection of tools, and supplies, are all taken up. Required of all majors and minors in art on this level. Prerequisite, Art 1, 2. Room 330-D. Fall, M. W. F. 11; Lab. T. Th. 8-11. 

152. Art Methods for Elementary Grades. Methods of teaching drawing, painting, design and handwork in the elementary schools. Creative expression, the integrated art program, how to use it to achieve desirable social outcomes and promote growth in knowledge, skills, proper habits and attitudes. A “must” in preparation of a grade school teacher. Prerequisite, Art 1 and 2 or equivalent amount of Art 104 and 114. Three credits. Winter, M. W. F. 8. Room 330-E. 

Studio Courses 

These courses are set up to give opportunity for all students to experience the thrill of creation as well as to give special help to the talented. All work is individual with several lines going side by side according to the special needs of each student. Direction and help is given during regular specified periods. Students will elect to do one to five credits of work in any line. Three hours of work in the studio is required during a week for each unit of credit. Any course may be repeated for further credit but more ad-
Art 20. Puppetry. Designing and making puppets; construction of puppet stage. Credit arranged. Fall and Spring, M. W. 2-5.

Art 104. Creative Expression. A, drawing; B, painting; C, illustration. Students may specialize in any branch of drawing, painting, book illustration, applied costume illustration and costume design or commercial illustration. Credit arranged. Fall or Spring, M. T. W. Th. 2-5; Winter, M. W. F. 2-5. 

Art 105. Scientific Drawing, Painting. This work is coordinated with various scientific departments: A, Botanical; B, Zoological; C, Geological. Instructors in the science departments concerned may direct the content of the work done if desired. Credit and time arranged. Any quarter.

Art 106. Creative Sculpture. A, carving in stone; B, carving in wood; C, modeling and casting. Credit arranged. Any quarter, M. T. W. Th. 2-5. Room 330-D.


Art 110. Professional Design. A, textile and wallpaper; B, interior decoration; C, furniture and industrial design; D, house design and architectural composition. Prerequisite, Art 1 or equivalent. Any quarter. Time and credit arranged. Room 330-D.


Art 114. Minor Crafts. A, leatherwork; B, basketry; C, polychrome and gesso; D, textile decoration, including block printing, stenciling, batik, etc. Credit arranged. Fall and Spring, M. W. 2-5, Reynolds. Winter, M. T. W. Th. 2-5. Room 330-E. Larsen.

Art 115. Graphic Art. A, etching; B, wood block printing or wood engraving; C, monotype or lithographic drawing; D, silk screen and paper stenciling. Fall, Winter or Spring, M. T. W. 2-5. Credit arranged. Room 330-D.
Education

C. E. McCLELLAN, Professor Emeritus; E. A. JACOBSEN, L. R. HUMPHREYS, ARDEN FRANDESEN, JOHN C. CARLISLE, Professors; EDITH BOWEN, LEE GRANDE NOBLE, EDITH SHAW, Assistant Professors; GEORGE S. BATES, ALVIN HESS, Instructors.

10. College and Life. Orientation course especially designed for freshmen but open to all students. Fall, Winter or Spring, M. W. 1; or T. Th. 2. Two credits.

DIVISION OF ELEMENTARY EDUCATION

JOHN C. CARLISLE, Chairman.

General requirements for graduation with the Bachelor of Science degree are listed on page 46. For a major in elementary education the student must complete at least 36 credits of profession work in the fields of education and psychology and in addition a minimum of 30 credits in one field of study or 18 credits in each of two fields in addition to lower division group requirements. A field of study is interpreted in the broad sense, such as Social Science, Natural Science, Fine Arts, and so forth.* Psychology, Child Development, or Library Science may be used for these special fields of study. The student is urged to get in touch with the department during his first quarter at the college for help in planning his program in detail.

Additional requirements are made up of courses in three general groups as follows:

1. Courses designed to develop a broad, liberal background. Included in this group the student must complete 10 credits in English, at least 6 of which shall be in English Composition, 10 credits in Social Science, 10 credits in Physical Science, and 10 credits in Biological Science.

2. A second required group of more technical preparatory courses includes English 24, Art 152, Music 130, Physiology 114, Physical Education 182, Speech 107 and Education 145. Either the course in music or art may be waived if the student has an excess of credit in any one other of the above special curriculum areas.

3. The third required group includes the following professional courses in education: Education 103, Psychology 110, Psychology 112, Education 114, and Education 104, 105 and 106, the last two must be taken during the same quarter. Enrollment in these two courses will be permitted only after the student has completed the requirements listed in (1) and (2) above, as well as the courses in principles of elementary education and educational psychology. Equivalent courses may be substituted with specific consent of the major professor.

Additional courses to make up the total of 36 credits in psychology and education may be elected from those listed below, with the approval of the department. Completion of the above requirements will qualify the student for the State of Utah general Elementary Certificate.

Students wishing to prepare for elementary school supervision or administration should consult the department for special guidance in planning their work.

103. Principles of Elementary Education. Deals with the aims, functions, work and attainable goals of the elementary school as an integral part of the American system of education; its relations with the community and the other schools of the American series. Part of the work of the course will be devoted

*This requirement will be increased for students who do not complete their work prior to September 1, 1947, at which time new certification rules formulated by the Utah State Board of Education become effective.
to observation and analyses of practices and procedures in selected elementary schools within the vicinity of the College. Four credits. Fall or Spring, M. W. F. 9. Two hours of observation weekly. Time arranged.

104. Elementary School Curriculum. Designed to familiarize prospective elementary teachers with the content of the elementary curriculum, the objectives and standards to be realized in the grades, and to extend the student's scholarship in the various fields explored by pupils of the elementary school. Three credits. Fall and Winter, M. W. F. 10.


106. Practice Teaching. For juniors or seniors who have had Educational Psychology and Principles of Education. The apprentice plan is followed which requires an initial period of observation with minor responsibility but with gradual increase of work and responsibility as trainee's ability is demonstrated. Registration for all quarters should be arranged for at the time of fall registration. Twelve credits. Any quarter, time arranged. Students who have credit for other courses in practice teaching, or who have successful teaching experience, may register, by special permission of the instructor, for less than 12 credits.


108. Social Studies in the Public School. A consideration of the social responsibilities and opportunities of children and youth in the present and post-war world. The part that should be played by the school and the teacher in helping boys and girls to meet these problems will be studied. This will deal with both content and methods in social studies for the public schools. Three credits. Fall, M. W. F. 10.

110. Diagnostic and Remedial Teaching. A consideration of the specific objectives of the elementary school and methods of analyzing the extent to which these objectives are reached. Diagnostic and remedial measures with respect to various areas of the curriculum will be studied. Two credits. Spring, T. Th. 9.

114. Organization and Administration of Education. (See Division of Administration.)

165. Rural Education. An overview of the major problems of rural life as they relate to education. The adaptation of general educational objectives to rural conditions, especially as they pertain to Utah. The organization of rural schools, the course of study, and methods in education suited particularly to the rural school problem on both elementary and secondary levels. Two credits. Winter, T. Th. 9.

201. Background of Modern Education. (See Division of Graduate Work.) Educational Psychology. (See Psychology 102a.) Application of Statistics to Education and Psychology. (See Psychology 102b.) Child Psychology. (See Psychology 110.) Psychology of the Elementary School Curriculum. (See Psychology 112.) Clinical Psychology. (See Psychology 103.) Psychology of Learning. (See Psychology 107.)
DIVISION OF SECONDARY EDUCATION

JOHN C. CARLISLE, Chairman.

Students preparing to teach in the secondary schools will usually find it advantageous to major in subject matter other than education and complete professional requirements in the departments of Education and Psychology.

Students may major in secondary education under one of the two following plans: (1) a teaching major of not less than 30 credits approved by the department in which the major is chosen, and a teaching minor of not less than 18 credits; (2) a composite major of 60 credits in three or more closely related fields with not fewer than 18 credits in any one department within the composite major.

In addition to the teaching major and minor the student must complete 36 credits in professional education, including the courses required for the teaching certificate in the secondary schools, and Education 201 or its equivalent. The electives are to be chosen from other courses listed under secondary education.

The courses required for a teaching certificate in the secondary schools of Utah are: Educational Psychology, Guidance and Personnel, Organization and Administration of Secondary Schools in Utah, Interpretation and Articulation of School Programs, Observation and Teaching in Secondary Schools, including Principles and Methods of Teaching, and electives in secondary education sufficient to make the total 30 credits.

The student should complete Psychology 102a and 102b and Education 111 before enrolling for other courses in the department except Ed. 114.

Of the 30 credits required for the secondary school teaching certificate, three hours may be chosen by the student from the following courses. The course chosen must be in either the major or minor field of the candidate.

Educational Psychology and Application of Statistics to Education and Psychology. (See Psychology 102a and 102b.)

111. Principles of Secondary Education. Problems and principles involved in the learning process; relationships between learner, subject matter, and method; objectives, motivation, direction, discipline, evaluation and other fundamental considerations. Prerequisites; Educational Psychology. Three credits. Any quarter, M. W. F. 8. Noble

113. Occupational and Vocational Guidance. (See Division of Vocational Education.)

114. Organization and Administration. (See Division of Administration and Supervision.)

115. Secondary School Curriculum. Deals with the nature and function of the curriculum. Different viewpoints respecting the curriculum, and examples of new type curricula now attracting attention in various parts of our country, are examined and evaluated. Three credits. Spring, T. Th. 8, W. 4. McClellan

116. Articulation of the Educational Program. (See Division of Administration.)

123. The Teaching of English. A practical course planned for those who are either teaching or planning to teach English in public schools. The purpose is to study both materials and methods in the three fundamental areas of English instruction: grammar, composition, and literature. Three credits. Fall, M. W. F. 11. Hayward

127. Classroom Management and Technique. This course, to be taken along with Education 129a, considers such factors in the teaching process as: personology of the teacher, planning instruction, study procedures, types of teaching, adapting classroom practices to individual differences, discipline, evaluation. Two credits. Any quarter, T. Th. 8. Cartisle
129a. Practice Teaching in Secondary School. Application of the principles of education. High school and junior high school teaching is observed, reports on observation made, teaching plans developed, and some apprentice teaching done. This course, or equivalent, is prerequisite to Education 129 and is required for certification. It is urged that students make arrangements for the course before the quarter in which they plan to enroll. Approximately six hours of observation per week are required. Four credits. Any quarter. Time arranged.

129b. Practice Teaching in Secondary School. Required for Secondary School Certificate. Open only to seniors and graduate students. Prerequisites, Education 129a, Psychology 102, Education 111 and Education 113; also eighteen hours of credit in the field in which student expects to do practice teaching. Four credits. Any quarter, time arranged for practice teaching and 4 to 5 Mondays.

145. Safety Education. Emphasizes (a) the needs for safety education in the modern world; (b) the role of the school in a program for safety; (c) methods and materials for teaching discussions, and readings, stressing various aspects of safety and directed by safety specialists from many areas. Two credits. Winter and Spring, T. Th. 11.

201. Background of Modern Education. (See Division of Graduate Work.)

241. Social Education. (See Division of Graduate Work.)

107. The Teaching of Reading. (See Division of Elementary Education.)

108. Social Studies in the Public School. (See Division of Elementary Education.)

Three credits earned in methods courses in any of the following fields may be counted toward certification by majors in these fields.

123. The Teaching of English. (See English 123.)

151. Art Education for High School. (See Art 151.)

179. Methods of Teaching Typewriting. (See Secretarial Science 179.)

180. The Teaching of Stenography. (See Secretarial Science 180.)

DIVISION OF VOCATIONAL EDUCATION

L. R. HUMPHREYS, Chairman.

Candidates for a teacher's certificate in the several fields of vocational education will need to complete the following courses:

Agriculture: Psychology 102a, 102b; Education 112, 113, 114, 116, 125, 126.

Home Economics: Psychology 102a, 102b; Education 112, 113, 114, 116, 120, 121, 122a.


This course is in addition to the 30 hours in Psychology and Education.
114. Organization and Administration of Education. (See Division of Administration.)

116. Articulation of the Educational Program. (See Division of Administration.)


121. Problems in Teaching Home Economics. Study of recent investigations in the field of Home Economics and their bearing upon Home Economics curriculum and teaching methods. (Especially for teachers who are to qualify for a Vocational Certificate. It is suggested that Education 112 and 113 be taken daily the first three weeks and daily the last three weeks of the term simultaneously with this course in the fall term and Education 112 and 114 under the same arrangement winter term.) Prerequisite, Education 120. Four credits. Fall, Winter, and Spring. Time arranged. Phillips

Education 122a. Student Teaching in Home Economics. Observation and teaching of vocational homemaking under supervision in public schools having cooperative agreement. The trainee will leave the campus the middle five or six weeks of the fall or winter term and teach each day a full homemaking program in one of the approved schools. Prerequisites, Education 120 and Education 121. Eight credits. Spring. Time arranged. Phillips

Education 122b. Practice Teaching in Home Economics for Dietitians. Designed to meet needs of student dietitians whose responsibilities will involve teaching student nurses, student dietitians, and patients. In the spring quarter the trainee will teach at least one hour daily in one of the approved local schools. Prerequisite, Education 120 with Education 121 taken in the same quarter as Education 122b. Four credits. Time to be arranged. Phillips

*124. Methods of Teaching Farm Mechanics. Scope of mechanics in agriculture, lesson planning, course of study preparation, shop equipment and management, skill requirements, and supervised practice. Five credits. Time arranged. Humpherys


126. Practice Teaching in Agriculture. Practice teaching in approved local vocational agricultural departments under supervision. Trainees will be expected to leave the campus to train in a selected high school of the state for full time. Four to eight credits. Fall, Winter, and Spring. Time arranged. Humpherys

199. Special Problems in Home Economic Education. This course is developed around individual needs of students which are not otherwise provided for in the curriculum. One or two credits any quarter. Time arranged. Phillips

DIVISION OF ADMINISTRATION AND SUPERVISION

E. A. Jacobsen, Chairman.

Required courses: Courses prescribed for an elementary or for a secondary teaching certificate, and in addition, 18 hours chosen from the following courses listed below: Majors in this field meet the academic requirements for Utah certificates in administration and supervision.

114. Organization and Administration of Education. Deals with the fundamental principles of organization and administration of schools in our American public school system of education with special emphasis on the Utah conditions. Three credits. Fall and Winter, M. W. F. 10. Jacobsen

*Approval of instructor is necessary before student is accepted.
116. Articulation of the Educational Program. A survey of existing needs for closer articulation of the various educational units and agencies. Discussion of the factors conditioning nature and extent of articulation and of the unifying principles upon which a well articulated education program rests. Three credits. Fall and Spring, M. W. F. 2.

Jacobsen

181. School Finance. A study of the importance of finances in a school system and the principles and practices involved in the collecting and the distributing of school revenues, with special deference to the conditions in Utah. Two credits. Fall, T. Th. 11.

Jacobsen

201. Background of Modern Education. (See Division of Graduate Work.)

205. Reading and Conference. (See Division of Graduate Work.)

211. Educational Measurements and Statistics. (See Division of Graduate Work.)

219. The Principal and His School.

221. Advanced School Administration. (See Division of Graduate Work.)

230. Supervision of Instruction. (See Division of Graduate Work.)

DIVISION OF LIBRARY SCIENCE

DAVID W. DAVIES, Chairman.

Library Science may be used as a teaching major or minor in connection with a major in Education. The major shall consist of not less than 30 credit hours and the minor of not less than 18 credit hours chosen from the following courses:

1. The Use of the Library. A general course designed to help students to become efficient in using books and libraries. Emphasis will be placed upon use of card catalog, periodical indexes, and reference books. Two credits. Fall and Winter, T. Th. 8 or M. W. 8.

Rich

100L. Reference Materials and Bibliography. A continuation of work done in The Use of the Library, which course is a prerequisite to this one. Principal reference tools in each field are studied. Winter, M. W. F. 8. Rich

113L. Book Repair and Binding. Methods of book repair, necessary binding records, and the history of book binding. Two credits. Spring, T. Th. 9. Laboratory to be arranged. Staff

120L. First Quarter Cataloging and Classification. Classification of books according to the Dewey decimal system and cataloging instruction adapted primarily to the use of school and public libraries. Three credits. Staff

121L. Second Quarter Cataloging and Classification. A continuation of the work undertaken in Library Science 120L which is a prerequisite to this course. Three credits. Staff


160L. The Art of the Book. The history of bookmaking and printing. One credit. Time arranged. Staff

Teaching of Reading. (See Division of Elementary Education 107.) Three credits.

Children's Literature. English 24. Four credits.

Speech 18. Five credits.
DIVISION OF GRADUATE WORK IN EDUCATION

E. A. JACOBSEN, Chairman.

The Division of Graduate Work in the School of Education aims to serve the following purposes:

(a) to provide fundamental courses on a graduate level leading to advanced study and specialization in Education;

(b) to provide training for the several branches of school administration and supervision;

(c) to provide training in connection with the department of psychology, for specialists in clinical and guidance work in the schools;

(d) to provide, in connection with other departments, teachers, with a year of graduate work.

In addition to the graduate courses listed, the student may elect upper division courses from the undergraduate divisions, and graduate courses related to the field of specialization from other departments. The selection of courses should be made in terms of the purpose chosen and in consultation with the major professor.

A graduate minor, other than Psychology or Education, may be used in connection with a graduate major in Education.

Education 201. Background of Modern Education. An integration of the history and philosophy of education as a basis for the understanding of modern education. The evolution of educational thought, the sources of great philosophies of education in relation to their times. Five credits. Fall, Daily 10.

Noble

Education 203. Evaluating the Elementary School. Studies evaluating the changing elementary school will be analyzed. Particular attention will be given to organization and curriculum. Newer methods utilized in evaluation will be considered. Enrollment open only to experienced teachers or prospective teachers who have completed their courses in practice teaching. Three credits. Winter, M. W. 4:30 to 6.

Carlisle

Education 205. Reading and Conference. A course providing for individually directed study in the fields of one's special interest and preparation. One or two credits per quarter. Any quarter. Time arranged.

Staff


Humphreys

219. The Principal and His School. Deals with practical problems confronting the principal in administration and supervision, in terms of the changing social scene and changing concepts of school administration. Problems of administration, supervision, curriculum, pupil personnel, school-community relations, as they apply to the work of the principal all will be given consideration. Three credits. Winter, M. W. F. 2.

Carlisle

Education 221. Advanced School Administration. A general study of the work of the school administrator and the principles upon which the profession of school administration is founded and efficiently practiced. Consideration will be given to major educational problems with which the school administrator is confronted. Five credits.

Jacobsen

Education 237-8-9. Educational Seminar. Gives opportunity for the investigation and report of individual problems and for group discussion and criticism on these reports. Minimum of one quarter required of all Education majors. Any quarter. Time and credit arranged.

Staff

Education 241. Social Education. The implications for education involved in social conditions and social change. The social significance of current educational theories and practices. Three credits. Winter, T. Th. 8, W. 3:30-4:30.

Noble
Education 267. Introduction to Research. An inquiry into the nature and sources of research problems with a study of the underlying principles and the method of working out such problems in the field of education. Some attention is given to the matter of thesis writing as a problem related to research. Two credits. Winter. Time arranged. McClellan

Education 271. Research and Thesis Writing. Provides for individual work in thesis writing with the necessary guidance and criticism. Any quarter. Time and credit arranged.

Reading on Current and Special Topics in Psychology. (See Psychology 205a, b, c.)

Research on Special Problems in Psychology. (See Psychology 206.)

Music

N. Woodruff Christiansen, Professor; Walter Welty, Associate Professor.

Courses in the Music department are designed to, (a) serve the general cultural needs of all students, (b) meet the major and minor requirements of prospective teachers.

The Music department is also a valuable service department; individuals, groups, and organizations fill a constant and urgent need in the neighboring schools and communities.

Music 1, 4, 5, 11, 12, 13, 80, 81, 89, may be used for junior college group requirements.

Vocal Music Major. Required courses: Music 1, 4, 5, 11, 12, 13, 121, 122, 123, 53, 54, 55, 106, 114, 117, 124, 125, 126, 130, 134. Also sufficient skill to present a creditable solo recital prescribed by the major professor; ability to play second grade piano music at sight, a general course in oral expression, creative dancing; and one year of a foreign language, or a course in foreign language pronunciation. Consult major professor early and often.

Instrumental Music Majors. To complete a major in instrumental music, with recommendation to teach band and orchestra, the following courses are required: Music 11, 12, 13, 111, 112, 113, 114, 117, 121, 122, 123, 121, 122, 123 must be taken before practice teaching; three or more quarters of band as prescribed by the major professor, three quarters or equivalent of piano, sufficient private instruction or equivalent on a band or orchestra instrument for a creditable solo performance, one quarter each private instruction, or equivalent, on a string instrument, a brass instrument, and a reed instrument.

For a music major without recommendation to teach band and orchestra, consult the major professor.

In 1936 the College was awarded a complete Carnegie music set containing 2,000 recordings, 150 bound scores, and 100 selected books of music. This material, together with additions made since that time, is available to students and is used in the music courses.


4, 5. Eye and Ear Training. Teaching scales, intervals, keys in major and minor modes, reading music at sight and writing music from dictation. A continuous course. Three credits. Fall and Winter, T. Th. 9. Welty
7, 8, 9. Elementary Class Piano Instruction. For students without previous work in piano. General keyboard facility. Sight reading of folk tunes and the easier classics; harmonizing melodies by ear. Recommended for prospective teachers in the elementary schools. One and one-half credits each quarter. Fall, Winter and Spring, M. W. F. 3.

11, 12, 13. Harmony. Prerequisite, familiarity with the piano keyboard. Chord structure and progressions, to and including modulations, melody writing and musical analysis. Three credits each quarter. Fall, Winter, and Spring, M. W. F. 10.

15, 16, 17. String Ensembles. Offers an opportunity for good players to organize into trios, quartets, and other small units. One credit each quarter. Fall, Winter, and Spring. Christianesen

18, 19, 20. Symphony Orchestra. Provides training and practical experience in a wide range of orchestral work. Students are required to play at all public appearances of the orchestra. One and a half credits each quarter. (See 118, 119, 120.) Fall, Winter, and Spring. M. W. F. 12.


27, 28, 29. Ladies' Chorus. Same conditions as for men's chorus, applied to women's voices. One credit each quarter. Fall, Winter, and Spring. T. Th.

35, 35, 37. Vocal Groups. Offers an opportunity for good voices to organize into trios, quartets, and other small units. One credit each quarter. Fall, Winter, and Spring. Time arranged. See instructor before registering.


41, 42, 43. Band. This organization is the College Concert Band. It includes the R. O. T. C. Band and all other students who qualify. Concerts will be given and music furnished for athletic events. State tour end of Winter quarter. Members are required to play at all public appearances of the band. One credit each quarter. (See 141, 142, 143.) Fall, Winter, and Spring, T. Th. 12-2.

R. O. T. C. Band. Band men who are required to take Military Science should register for Military Science and then ask to be assigned to the R. O. T. C. Band.

44, 45, 46. Brass and Reed Groups. Brass quartets, sextets, and woodwind quartets. Members will be selected from applicants. One-half credit each quarter. Fall, Winter, and Spring. Time arranged.

47, 48, 49. Composition and Analysis. Practical composition in the small forms from the extended period to the song form with trio. Prerequisite, at least one year of harmony. Two credits each quarter. Fall, Winter, and Spring, T. Th. 9.

78, 71, 72. Voice Training Class. The principles of voice training will be studied. Attention will be given to the causes and corrections of improper tone production. As class progresses weekly recitals will be given. Open to all students. Required of all music majors. Recommended for elementary education students. One and one-half credits. Fall, Winter, Spring, M. W. F. 11.

84. Opera Appreciation. An intensive study is made of the world's best opera. Particular attention will be given to the development of the orchestra as an essential part of the opera. By means of recordings the choicest musical selections are learned. Two credits. Fall or Spring, T. Th. 3.
81. **Symphony Appreciation.** Complete symphonies are given by the phonograph method. A careful study is made of their form and content. Two credits. Winter, T. Th. 3.

89. **Bach, Beethoven and Brahms.** Their lives and works, their influence upon the development of music, and the influence upon their music of the times in which they lived. Two credits. Spring, T. Th. 10.

106. **Music History.** The appreciation of music from its historical and biographical bases, the development of small and large forms from folk music through the opera and the symphony. Not open to freshmen. Three credits. Winter, M. W. F. 9.


114. **Conducting.** The art and technic of effectively conducting choral and instrumental groups. Two credits. Spring, T. Th. 9.


118, 119, 120. **Symphony Orchestra.** Senior College credit is given students of advanced standing. Prerequisite, two years in Orchestra. One and one-half credits. Time as for Music 18, 19, 20.

121, 122, 123. **Band and Orchestra Methods.** A study of the various band and orchestra instruments, and the essential points in the teaching of them. Designed for students who may teach elementary bands and orchestras or who intend to follow music as a profession. This course must precede practice teaching in instrumental music. Prerequisite: general knowledge of music and average proficiency on at least one instrument. Fall—brass instruments; Winter—reed instruments; Spring—string instruments. Three credits each quarter. Fall, Winter, and Spring, M. W. F. 9.

124, 125, 126. **Advanced Chorus.** For juniors and seniors who have had choral experience. One credit each quarter. Fall, Winter, and Spring. Men, M. W. F. 12. Ladies, T. Th. F. 12.

130. **School Music Methods.** Methods of teaching music in the grades. Prerequisite, Music 4 and 5, or Music 11 and 12. No exceptions made to this rule. Three credits. Spring, M. W. F. 10.

131. **Secondary School Music Methods.** Designed to acquaint teachers of music in high school with the problems of teaching band, orchestra, choruses, and voice. Two credits. Spring, T. Th. 10.

134. **Counterpoint.** Prerequisite, Harmony 13. Strict contrapuntal composition in all five species, in two, three, and four parts. Three credits. Fall, M. W. F. 11.


141, 142, 143. **Band A.** Rehearsals to be held jointly with 41, 42, 43. Senior College credit will be given students of advanced standing. Prerequisites, two years of band. One credit each quarter. Fall, Winter and Spring, T. Th. 12-2.
PRIVATE INSTRUCTION COURSES

The following courses are given through private study only. Appointments and fees must be arranged with the instructor whom you select.

Note: Students taking one lesson a week in any private music study, and getting the required amount of practice and preparation, shall register for one and one-half credits per quarter. Students taking two lessons and getting the required amount of practice and preparation shall register for three credits per quarter.

Note: Written departmental approval must be secured on registration cards if the student plans to take private instruction from anyone other than a member of the regular resident staff. The Department reserves the right to reject credit if departmental standards are not met.

50, 51, 52. Piano. For students having less than two full years of piano instruction.

53, 54, 55. Vocal. Conditions same as for piano.

56, 57, 58. Wind Instruments. All the wind instruments of the band and orchestra. For students having less than two full years of previous training.

60, 61, 62. Violin. For students having less than two full years of previous training.

66, 67, 68. Pipe Organ. Conditions same as for piano.

150, 151, 152. Piano. For students recommended by an approved teacher, and satisfying the departmental standards for the equivalent of two full years of previous study.

153, 154, 155. Vocal. For advanced vocal students.

156, 157, 158. Wind Instruments. For students satisfying the departmental standards for the equivalent of two full years of previous study.

160, 161, 162. Violin. For students recommended by an approved teacher and satisfying the departmental standards for the equivalent of two full years of previous study.

166, 167, 168. Pipe Organ. For advanced pipe organ students.

Physical Education and Recreation

H. B. Hunsaker, W. B. Preston, Professors; Rachael B. Yocom*, Associate Professor; J. K. Vanderhoff, Assistant Professor; Israel Heaton, Vaughn Hall,............,............,............, Instructors.

INTERCOLLEGIATE ATHLETIC STAFF

E. L. Romney, Professor, Director Athletics; H. B. Lee, Kent Ryan, Howard B. Lindsey, Joe Whiteside, Assistant Professors; George Nelson, Instructor.

Service Courses

In the service courses of this Department, an opportunity is given each student to perfect skills in some form of physical activity which will help

*On leave.
establish a permanent interest in healthful recreation of the active as well as passive type, the promotion of physical fitness, the building of morale, and the maintenance of health.

A physical examination is given to all students at the beginning of each year in order to advise them properly as to the type of activity best suited to their individual needs.

Women students are required to take physical education service courses for six quarters. Work may be selected by the student; and the same numbered courses may not again be taken for credit. Before a student may enter an intermediate or advanced course, in any activity in which she has completed and received credit for the elementary course, minimum service course requirements must have been satisfactorily completed.

It is recommended that all male students take some activity course in Physical Education. A wide range of courses in aquatics, dual, team, individual and outing activities are offered each quarter. Credit in Physical Education will count towards a college degree.

Intramural Sports

Intramural sports are conducted as a part of the program of the Department of Physical Education. The department for women, in cooperation with the Women's Athletic Association, has charge of all women's athletics and offers a wide program of intramural sports.

The Department of Physical Education for Men carries on an extensive organized Intramural sports program. Competition in 12-16 sports is carried on in four separate leagues, fraternity, department, club, and all-campus. All male students are eligible and encouraged to participate in one of these leagues. Students who have qualified through the Physical Education Department for “preferred rating,” may receive Physical Education credit for Intramural sports.

The function of the intramural program is to give every student moral, social, physical, and educational values derived from competitive athletics. The program of athletics provides for both individual and team endeavor. “athletics for all,” which is the purpose of the establishment of intramural sports.

Recreation

The Physical Education department aims to meet the recreational needs and interests of every student whether he is being trained in agriculture, engineering, business, or other professional fields.

This department will try to prepare the future farmer, banker, teacher or doctor for wise use of his leisure time. After courses in this department, students should be so interested in recreation that they will be valuable aid to any community.

Awards will be given to managers of various recreational groups and individual awards for special achievement. There will be groups organized in hiking, water sports, winter sports, tap dancing, fencing, archery, horse shoes, tennis, golf, badminton, boxing, swimming, tumbling and social dancing.

Theory and Professional Courses in Physical Education

Because of the great demand for trained leaders in community recreation and playground management, directors of physical education in high schools, and for high school coaches, this department offers an opportunity to obtain a major or minor in physical education and also to meet the state requirements for certification of teachers of physical education, and coaches in high schools.
INTERCOLLEGIATE ATHLETICS

Intercollegiate athletics, inspired by the highest ideals and conducted on a high plane, provide an excellent course in training for citizenship and the preparation to wrestle with life’s problems.

In high schools and colleges Competitive Athletics become a great factor for student body consciousness and oneness, and an outlet for great enthusiasm born of loyalty. They pay dividends in good health, physical development, and such manly qualities as courage, self-control, and the spirit of cooperation.

Every student at the College is given an opportunity to try-out for the various teams. Attractive schedules with teams representing other colleges are arranged in football, basketball, track and field, swimming, wrestling, tennis, golf and skiing.

The College has an attractive Stadium where the games are played, and the Field House seats 3,500 people for basketball contests. It also provides practice areas for other teams.

A splendid spirit of cooperation exists between the Intercollegiate Athletic Department and the Physical Education Department, proper.

The College Health Service

The Health Service is maintained primarily for the care of students who may become ill during their stay on the campus. This service is also looked upon as an educational department to teach preventive medicine and hygiene. Through consultations, examinations, and advice it attempts to point out the causes of ill health, and to present clearly the fundamental laws of good health.

Service Courses for Men

2. Football. One credit. Fall. Daily 4. Romney

4, 5. Boxing. One credit each quarter. Fall and Winter. T. Th. 12; T. Th. 1. Staff and Nelson

7, 8. Wrestling. One credit each quarter. Fall and Winter. M. W. F. 1. Nelson

12. Track. One credit. Winter, Spring, Daily 3-5. Staff

13, 14, 15. Handball. See Department Head before registering. One credit each quarter. Fall, Winter, Spring. Time arranged. Staff

16, 17, 18. Swimming. One credit each quarter. Fall, Winter, Spring. Sec. 1. T. Th. 10; Sec. 2, M. W. 10; Sec. 3. T. Th. 1. Vanderhoff

23, 24, 25. Basketball. One Credit each quarter. Fall, Sec. 1, M. W. F. 2; Sec. 2, M. W. F. 3; Sec. 3, M. W. F. 8. Winter, Sec. 1, M. W. F. 11; Sec. 2, M. W. F. 3; Sec. 3, M. W. F. 8; Spring, M. W. F. 3. Staff

26, 27, 28. Restricted Gymnastics. This course for students physically unable to take required Physical Education. Students may register only after consultation with head of department. One credit each quarter. Fall and Winter, Sec. 1, M. W. F. 12; Sec. 2, T. Th. 12. Spring, M. W. F. 1. Staff


37, 38. Heavy Apparatus. One credit each quarter. Fall, Winter, and Spring, M. W. F. 11. Staff

Service Courses for Women

40. Speed Ball and Volley Ball. One credit. Fall, Sec. 1, M. W. 8, or Sec. 2, T. Th. 8.

41. Basketball. One credit. Winter, Sec. 1, M. W. 9; Sec. 2, T. Th. 9.

42. Softball and Field Hockey. One credit. Spring, Sec. 1, M. W. 12; Sec. 2, T. Th. 12.

44. Tumbling and Stunts. One credit. Spring, T. Th. 1.

45, 46, 47. Restricted Activities. For students physically unable to take the required work in physical education. Students may register only after consultation with the head of the department. One credit each quarter. Fall and Winter, Sec. 1 (corrective-restricted), M. W. F. 12; Sec. 2 (restricted), T. Th. 12. Spring, Sec. 1 (corrective-restricted), M. W. F. 11; Sec. 2 (restricted), T. Th. 2.


49. Intermediate Modern Dance. Prerequisite: P. E. 48 and satisfactory completion of minimum service course requirements. Further practice and development in modern techniques and composition. One credit. Winter, T. Th. 2.

51, 52, 53. Elementary Swimming. One credit each quarter. Fall, Winter, Spring. Sec. 1, M. W. 12; Sec. 2, T. Th. 12; Sec. 3, M. W. 11; Sec. 4, T. Th. 3.


56. Intermediate Swimming. Prerequisite: P. E. 51, 52, 53, and satisfactory completion of elementary minimum service course requirements. One credit. Fall, Winter, Spring, T. Th. 2.

58. Rifle. (Laboratory Fee $2.00.) One Credit. Fall and Spring, M. W. F. 9. Sec. 1.


78. Track and Field for Girls. One credit. Spring, M. W. F. 2.

154. Advanced Swimming. Prerequisite: P. E. 51 and P. E. 56, and satisfactory completion of minimum service course requirements in both courses or a senior life saving certificate. One credit. Fall and Winter, M. W. 9.

Service Courses for Men and Women

1. Hiking. One credit. Fall and Spring, Sec. 1, T. 3-5.

3. Winter Sports. (Laboratory Fee.) One credit. Winter, Sec. 1, T. Th. 12; Sec. 2, T. Th. 1; Sec. 3, T. Th. 2; Sec. 4, T. Th. 3.

9. Elementary Fencing. One credit. Fall, Sec. 1, M. W. F. 11; Sec. 2, T. Th. 11. Winter, Sec. 1, M. W. F. 10; Sec. 2, T. Th. 11. Spring, Sec. 1. M. W. F. 3.

60. Archery. One credit each quarter. Sec. 1, Fall, M. W. F. 9; Winter, M. W. F. 9; Spring, M. W. F. 9.
63. Recreative Games. One credit each quarter. Fall and Winter, T. Th. 10.
Staff

66. Badminton. One credit. Fall, Winter, Spring, Sec. 1, T. Th. 8; Sec. 2, T. Th. 9.
Staff

67. Elementary Tennis. One credit. Spring, Sec. 1, M. W. F. 8; Sec. 2, T. Th. 8; Sec. 3, T. Th. 9; Sec. 4, M. W. F. 10; Sec. 5, M. W. F. 11; Sec. 6, T. Th. 11; Sec. 7, M. W. F. 3.
Staff

68. Elementary Folk Dance. One credit. Fall, T. Th. 9; Winter, M. W. F. 8.
Staff

69. Intermediate Folk Dance. Prerequisite: P. E. 68 and satisfactory completion of minimum service course requirements. One credit. Winter, T. Th. 8.
Staff

70. Elementary Tap Dancing. One credit. Fall, Winter, M. W. F. 3; Spring, M. W. F. 2.
Staff

71. Intermediate Tap Dancing. Prerequisite: P. E. 70 and satisfactory completion of minimum service course requirements. One credit. Winter, T. Th. 8.
Staff

72. Social Dancing. One credit. Fall, Winter, T. Th. 10.
Staff

73. Golf. (Laboratory Fee.) One credit. Spring, Sec. 1, M. W. F. 11; Sec. 2, T. Th. 2.
Staff

Staff

109. Advanced Fencing. Prerequisite: P. E. 9 and 10, and satisfactory completion of minimum service course requirements. One credit. Fall, T. Th. 3.
Staff

136. Advanced Golf. (Laboratory Fee.) One credit. Spring, T. Th. 3.
Staff

Staff

Staff

166. Advanced Badminton. Prerequisite: P. E. 66, 36 or 57, plus satisfactory completion of minimum service course requirements. One credit. Fall, T. Th. 3, Winter, T. Th. 3. Spring, T. Th. 3.
Staff

167. Advanced Tennis. Prerequisite: P. E. 67, and satisfactory completion of minimum service course requirements. One credit. Spring, M. W. F. 2.
Staff

168. Square Dancing. One Credit. Fall and Winter, T. Th. 1.
Staff

Theory and Professional Courses

20, 21, 22. Fundamentals of Sports. A freshman laboratory course for Men Physical Education Majors. These courses are prerequisites for Physical Education 120-121-122. One credit each quarter, T. Th. 2.
Staff

30, 31, 32. Fundamentals of Sports. A sophomore laboratory course for Men Physical Education majors. These courses are prerequisites for Physical Education 130, 131, 132, and are a continuation of the Freshman class. One credit each quarter. Fall, Winter, and Spring, T. Th. 2. (Not taught 1946-47.)
Staff
First Aid. The standard American National Red Cross Course in first aid with emphasis upon the practical use of the knowledge as applied to everyday life in various occupations. Detailed demonstrations and practice. The American Red Cross First Aid Certificate may be obtained by students in the course who pass a satisfactory examination. Three credits. Winter, M. W. F. 10.

75. Introduction to Physical Education. A survey of the whole field of physical education, showing its relationship to art and enriched living. Two credits. Fall, T. Th. 8.

80. Nature and Function of Play. An analysis of the basic principles underlying play; the function of play in the growth, development, and social adjustment of the child and the adult. Two credits. Fall, T. Th. 10.


83. Playground and Community Recreation Leadership. For men and women. Consists of lectures and practical work. Lectures will consider selection of suitable material, and methods of handling various groups. Four credits. Spring, Daily 10.


86 and 87. Sports Officiating. The knowledge of rules, mechanics of officiating, proper instructions to other game officials such as timers and scorers, and game administration. Two credits. Fall and Winter, M. W. F. 12.

92. Organization of Intramural Programs for Women. To study the organization of sports days, play days, tournaments and the administration of intramural activities for women. Two credits. Winter, T. Th. 11.

94, 95, 96. Physical Education Laboratory. For teaching sport and dance fundamentals to freshman women majoring or minoring in physical education. One credit. Fall, M. W. F. 11. Winter, M. W. F. 2. Spring, T. Th. 9.

97, 98, 99. Physical Education Laboratory. Designed for teaching sport and dance fundamentals to sophomore women majoring or minoring in physical education. One credit. Fall and Winter, M. W. F. 1. Spring, T. Th. 10.

104. Kinesiology. Articulations and muscles with emphasis on movements and actions. The skeleton, manikin, and man himself will afford the laboratory material. Three credits. Fall, M. W. F. 10.

106. Physiology of Activity. Changes in important organ systems in relation to muscular activity are treated in this course. Four credits. Prerequisite: Physiology 4. Fall, M. T. W. Th. 1.

120, 121, 122. Technique of Team Sports. For men students majoring in Physical Education. P. E. classes 20, 21, 22 are prerequisites for this class. Students will be taught techniques of dual combatives and team sports. Each student will be expected to prepare a teaching syllabus of class work. Two credits each quarter. M. W. F. 2.

130, 131, 132. Technique of Individual Sports. For men students majoring in Physical Education. Prerequisites: Physical Education 30, 31, 32. Students will be taught the technique of individual, gymnastics, and aquatic sports. Each

*Does not satisfy Biological Science group requirement.
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student will be expected to prepare a teaching syllabus for the class work. Two credits each quarter. Fall, Winter, and Spring, M. W. F. 2. (Not given 1946-47.)

141. Advanced Modern Dance. A further development of skills in the use of tools of movement, rhythm and music improvisation and dance composition; present trends in the dance in Education. Two credits. Spring, M. W. F. 10.

150. Methods in Dance. A course designed for students who are planning to teach Dancing, Tap, Folk, Modern or Social Dancing. A syllabus will be required of each student. Four credits. Spring, M. T. W. Th. 1.

160, 161, 162. Techniques of Team Sports for Women. For students majoring or minoring in physical education. Students will be taught the techniques of teaching basketball, volleyball, speedball, and field hockey. Prerequisites, P. E. 94, 95, 96. or permission of Chairman of Women's P. E. Two credits. Fall, M. W. F. 10. Winter, M. W. F. 8. Spring T. Th. 11.

163, 164, 165. Techniques of Individual Sports. For women students majoring or minoring in Physical Education. Students will be taught the techniques of teaching tennis, badminton, fencing, golf, archery, swimming, diving, body conditioning, tumbling, stunts, and apparatus. Prerequisites, P. E. 97, 98, 99 or permission of Chairman of Women's P. E. Two credits each quarter. Fall, M. W. F. 2. Winter, M. W. F. 3. Spring, T. Th. 3.

179. Camping and Camp Craft. Designed to give training in camp technique and camp leadership. Different types of camps and their organization, supervision, equipment, and safety will be considered. Several short hikes and an overnight camp will be conducted during the course. Each member registering for the course will be expected to participate in these hikes. Two credits. Fall, T. Th. 11. Spring, M. W. F. 11.


180b. Practice in Corrective Physical Education. Practical application of 180a. Consult corrective instructor before registering. Spring, T. Th. 2. Two credits.

181. Corrective Physical Education. An analysis of the techniques or mechanics of the movements in the classified groups of physical education activities; an analysis of the teaching explanations of how to make movements or coordinations; an analysis of skills; a study of the nomenclatures used in the formulation of a working nomenclature for all the activities. Three credits. Spring, M. W. F. 11.


183. Interpretation of Physical Education Objectives. An analysis of the results and values of physical education activities under leadership in terms of development, adjustment and standards and their relationships as objectives. Five credits. Fall, Daily 9.


185. History of Physical Education. Two credits. Winter, T. Th. 9.
186. Heavy Apparatus. A study of methods of teaching gymnastics such as the horizontal bar, parallel bars, side horse, and rings. Prerequisite, at least one quarter of Elementary Heavy Apparatus. Two credits. Fall and Winter, M. W. F. 11.


189. Methods in Basketball. Coaching and training of basketball teams, beginning with fundamentals; passing, dribbling, and pivoting, with emphasis on the psychology of the game; various methods of defense and offense. Two credits. Winter, M. T. W. 12.

190. Methods in Track and Field. How to train for various track and field events; their form and technique; conduct of the athletic meets; construction, use, assembling of all equipment used by the participants on the field; development of certain types of individuals for certain events. Two credits. Spring, M. W. F. 1.

191. Interpretation of the Health Examination. Examination procedures, the detection of physical defects, the general assessment of the health of the individual, and the follow-up program. Three credits. Spring, M. W. F. 11.


Psychology

ARDEN FRANDSEN, Professor; DAVID R. STONE, Instructor.

Courses in the Department of Psychology contribute to the professional training and personal development of students in nearly every department of the College.

A major in psychology should prepare students for diagnostic and remedial teaching and for dealing with personality and conduct problems of children in the elementary school; for psychological counseling in high schools; for teaching psychology, study habits, mental health, and personality development in high school; for personnel work in industry, the U. S. Employment Offices, the Civil Service, etc.; and for graduate study in psychology, education, child development, and social work. It is also a suitable major for students planning to study medicine, nursing, or law after graduating from college.

Requirements for a major in psychology include 40 credits of approved courses from the following: Psychology 3, 54, 75, 102a and 102b, 103a and 103b, 107, 110, 112, 120, 140, 145, 205a, b, c, 206; Mathematics 111; Sociology 170; Education 107, 110, and 211; and Speech 171.

A minor in psychology (including Psychology 3, 102a, 102b, 103a, 103b, and 75 or 107 or 120 or 140) is recommended for any high school teacher who expects to participate in the school guidance and counseling program and for social workers who do not take an undergraduate major in psychology.

Minor: Eighteen credits of approved courses from those listed above.

3. Elementary General Psychology. A study of the general principles of human behavior including: nature of personality; factors determining develop
ment; how we learn, observe, and think; motives of human conduct; dealing with people; and the maintenance of personal efficiency and mental health. Intended for Lower Division students in all schools of the College. Five credits. Fall, Daily 8, 9. Winter, Daily 8, 2. Spring, Daily 8, 9. Frandsen and Stone


54. Psychology of Business and Industry. The methods and explanatory principles of psychology will be applied to understanding several general problems of business and industry, including: vocational choice and the selection of employees; advertising and selling; marketing and consumer research; conditions for efficient work; and the psychological aspects of training for work in business and industry. (See also Bus. Adm. 54.) Prerequisite, General Psychology or instructor's approval. Three credits. Winter, M. W. F. 9. Stone

75. Experimental Methods in Psychology and Education. A study of the scientific method and of specific experimental procedures applied in the study of fundamental problems in psychology and education. Prerequisite, General Psychology. Three credits. Spring, M. W. F. 2. Frandsen

102a. Educational Psychology. A professional course for prospective high school teachers intended to increase understanding of personality and to develop greater insight into the conditions for effective learning. Applications to development in adolescence of both normal and deviate personalities, to provisions for individual differences, and to learning junior and senior high school subjects will be emphasized. Prerequisites, General Psychology, and for students who have not taken Elementary Statistics, it is recommended that Psychology 102b either precede or be taken parallel with Psychology 102a. Three credits. Fall, M. T. W. F. 9. Spring, M. T. W. F. 10. Frandsen and Stone

102b. Applications of Statistics to Education and Psychology. An elementary study of the statistical procedures used in handling test scores in the schools and of the concepts needed to read current educational and psychological literature. Two credits. Fall, Th. 9. Spring, Th. 10. Frandsen

103a. Clinical Psychology: Psychometrics applied to guidance, adjustment problems, and remedial teaching. A course for school counselors, personnel workers, social workers, and clinical psychologists, which considers the selection, evaluation, administration, interpretation, and practical uses of tests of intelligence, aptitudes, interests, personality and quality of personal and social adjustment. Prerequisites: General Psychology and Elementary Statistics. Three credits. Fall, M. W. F. 11. Frandsen

103b. Clinical Psychology: Directed practice in the administration of individual tests. The main emphasis in the course will be on acquiring skill in diagnosing intelligence by the individual Binet procedure; but the writing of clinical reports and recommendations and the uses of other individual tests of aptitudes, personality, and adjustment will also be studied. Prerequisite: Clinical Psychology or its equivalent. Three credits. Winter, M. W. F. 1. Frandsen

103c. Clinical Psychology: Theory and practice of counseling and psychotherapy. In educational and vocational guidance, in improving school achievement and worker efficiency, and in treating problems of personal and social maladjustment, the uses of the following procedures will be studied: non-directive counseling; directed problem-solving interviewing; giving advice, assurance, persuasion, and information; and of controlled family, school, club or camp, community, and institutional environments. Prerequisite, General Psychology. Three credits. Spring, M. W. F. 1. Frandsen

110. Child Psychology. A study of the roles of maturation, learning, and environmental conditions in the motor, mental, social, and emotional development of children from birth to adolescence. Generalizations with respect to individual differences, emotions, motivation, how children learn, observe, and think will be applied to understanding and guiding children's behavior in home, school, and community. Opportunity for observation and applications of psychological methods of child study in the school will be provided. Prerequisite: General Psychology. Three credits. Fall, M. W. F. 2; Spring, M. W. F. 8.

112. Educational Psychology of the Elementary School Curriculum. A study from the point of view of psychological theory and research, of the aims, selection and sequence of content, methods of teaching, provisions for individual differences, and measurement of outcomes in the elementary school curriculum. The tool subjects will be emphasized. Prerequisite, General Psychology. Three credits. Winter, M. W. F. 11.

120. Psychology of Social Behavior. A study of the adjustment of the individual to his human environment, including consideration of learning, social habits, social motivation, language, attitudes, and group behavior. These concepts will be applied in understanding such topics as propaganda, war psychology, group prejudices, morale, and leadership. Prerequisite, General Psychology. Three credits.

130. Psychology of Exceptional Children. The development and behavior characteristics of exceptional children and of the education, home management, social control, and psychological treatment especially suited to their needs. The groups included are the mentally deficient, the gifted, children with special achievement disabilities, speech defectives, the crippled and physically handicapped, and children with serious personality and conduct problems. Three credits. Fall, M. W. F. 1.

140. Abnormal Psychology. A descriptive and explanatory study of the varieties of mental abnormality—psychoses, psychoneuroses, and minor maladjustments—their causes, the methods of treatment, and the mental hygiene approach in preventing psychological maladjustments. Prerequisite, General Psychology. Three credits. Spring, T. Th. 2.

145. Mental Hygiene. The common personal and social adjustment problems of normal people. It shows how people, in striving to attain a balanced satisfaction of motives in their major life activities, learn different modes of adjustment: effective patterns of behavior, a variety of maladjustive mechanisms, and non-adjustive reactions. It should aid in cultivating personal efficiency and mental health and increase understanding of the human problems dealt with by parents, teachers, social workers, and personnel workers. Prerequisite: General Psychology. Three credits. Winter, M. W. F. 10.

205a, b, c. Readings on Current and Special Topics in Psychology. Weekly discussions of topics in current magazines plus independent reading either of some especially significant book or of periodical literature on some specialized topic, selected according to each student's interest. Two credits each quarter. (May be taken 1, 2, or 3 quarters.) Fall, Winter, and Spring, Th. 4.

206. Research on Special Problems in Psychology. Credit and time arranged.
## SCHOOL OF ENGINEERING, INDUSTRIES AND TRADES

*J. E. Christiansen, Dean*

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General Information

The School of Engineering, Industries and Trades consists of two major divisions; namely, Engineering and Industrial. Departments in each of these divisions that offer work leading to graduate or undergraduate degrees, or both, are as follows:

Engineering Division:
- Agricultural Engineering
- Civil Engineering
- Irrigation and Drainage Engineering

Industrial Division:
- Aeronautics
- Automotive
- Industrial Education
- Metalwork and Mechanical Drawing
- Radio
- Woodwork and Building Construction

The Civil and Agricultural Engineering curricula were established in 1888 when the College was founded. Automotive, Metals and Woodwork and Building Construction were also established in 1888, but under the name, Mechanic Arts. Degree work in Radio was established in 1929. Degree work in Aeronautics was established in 1940. The four-year curricula lead to the degree of Bachelor of Science with mention of the specific courses taken.

Agricultural Engineering. In Agricultural Engineering, students may specialize in irrigation and drainage, soil conservation, farm machinery, rural electrification, or farm structures, by making an appropriate choice of electives.

Civil Engineering. In Civil Engineering, students may choose their major from Highways, Structural Design, Sanitary, or General Engineering.

Industrial Division. This division offers four-year degree courses in Aeronautics, Auto Mechanics, Metals and Machine Design, Woodwork and Building Construction, Radio, and Industrial Education. In addition, terminal short courses in the trades are offered in the fields of Aircraft Engines, Aircraft Mechanics, Auto Mechanics, Machine Shop Practice, Radio, Carpentry, Welding, Auto Body Reconditioning, Diesel Repair, Refrigeration and Air Conditioning and Photography. The degree curricula in the first five fields are designed to train skilled technicians, supervisors, managers, plant operators, and shop and garage foremen, and the sixth to train teachers in Industrial Arts. The terminal short courses are designed to meet the needs of those who do not desire to remain in college for four years and yet who wish to learn a skilled trade.

Objectives. The purpose of each of the four-year curricula is to afford the student an opportunity to secure the thorough, fundamental, and technical education which is necessary for professional work of the highest grade in Engineering or Industries and Trades, and in addition, insure the development of those physical, mental, moral, and social qualities which are essential to high professional attainment.

The purpose of the terminal curricula is to train skilled mechanics and technicians to work in the trades and industries.

Faculty Advisers. Personal contact is provided for through a system of advisers who confer frequently with the students about their work.

Technical Studies. Of the total credits required for graduation 133 are in Engineering Technology, 61 in basic sciences and 27 in the humanistic and social areas. The nature of the technical studies is fully explained in the descriptions of the several courses in the respective curricula.
Technical Lectures. During the freshman year all engineering students participate in a series of technical lectures delivered by members of the engineering faculty and engineers engaged in professional work who are brought in for this purpose. These lectures constitute a general introduction to the nature of and opportunities in the engineering profession.

Engineering Societies. General professional association and advancement are promoted by the activities of the student branches of the national engineering societies, of which the following are represented either by faculty membership or student chapters, or both: American Society of Civil Engineers, American Road Builders' Association, and American Society of Agricultural Engineers.

Surveying Camp. During the summer session following the Sophomore year a surveying camp is held where plane, topographical, and hydrographic surveying are taught.

Engineering Seminars. Engineering seminars are a feature of the advanced engineering work.

Field Trips. Field trips to local construction projects, engineering works, and industries are scheduled for all Engineering and Industrial Division students. All seniors in Engineering are required to take a supervised field trip covering the major engineering works in the western United States. This trip is scheduled for the last two weeks of the spring quarter. Estimated cost of trip is $50 to $50.

Opportunity for Graduates. The tremendous modern development of industry, the necessity for control and development of natural resources, the rapid advance of transportation and communication, and the development of structures to meet the needs of society give assurance that future graduates in the Engineering and Industrial Divisions will have ample opportunity for professional employment of an interesting and remunerative character.

Personnel Service. The School of Engineering, Industries and Trades, through its faculty, establishes definite contacts with those industries, corporations, municipal, state, and federal agencies that employ technically trained men. Employment assistance is given the members of each graduating class, the alumni who desire to change positions, and the undergraduates who wish summer employment.

Admission. Engineering and Industrial Divisions. For general requirements, see statement on page 38. In addition to these general requirements, all students entering the engineering division must present the equivalent of, or take without credit toward graduation, Math. 33 and 34.

All students over eighteen years of age are eligible to follow the terminal short-course curricula. Students, 16 years old or over, who have not graduated from high school may take this work as vocational students upon the recommendation of the principal of their high school.

Scholarship. The faculty reserves the right to accept toward graduation only those credits with a grade of C or better.

Graduation. Candidates for graduation must satisfy the prescribed curriculum for their elected major, and in addition, physical education and basic Military Science.

ENGINEERING DIVISION

The Engineering Division offers undergraduate and graduate work in Civil, Irrigation and Drainage and Agricultural Engineering. Particular emphasis is placed upon graduate studies in Irrigation and Drainage Engineering. Many leaders in the field of irrigation and drainage are graduates of the Irrigation and Drainage Department.
All candidates for a degree in Engineering are required to complete satisfactorily the following basic courses:

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Agricultural Engineering

O. W. ISRAELSEN, Professor; C. H. MULLIGAN, Associate Professor; JOSEPH COULAM, SPENCER H. DAINES, Assistant Professors.

For nearly a century in America, those agricultural problems that have demanded the help of engineers have been solved by civil, electrical, and mechanical engineers. During the last quarter century, the need and value of engineering services in agriculture have grown so rapidly and widely as to demand the development of a major field of engineering designated as Agricultural Engineering.

The Department of Agricultural Engineering offers instruction in courses involving the application of engineering knowledge to the solution of farm problems. The most important of these problems are in the fields of farm machinery, farm motors, rural electrification, farm buildings, farm sanitary equipment, soil erosion control, irrigation, and drainage.

A four-year curriculum leading to a Bachelor of Science Degree in Agricultural Engineering is offered. This curriculum includes mathematics, arts and sciences, fundamental subjects in the different engineering departments, agricultural courses selected to familiarize the student with modern agriculture, and a thorough treatment of the Agricultural Engineering courses.

Graduates from this curriculum have opportunity to work in the following fields: (a) the manufacture of farm machinery and equipment; (b) irrigation, drainage, and soil conservation; (c) rural electrification; (d) designers and contractors for farm buildings; (e) teaching, research, and extension in colleges, experiment stations, and in the United States Department of Agriculture; (f) agricultural engineering experts for farm papers and technical magazines; (g) salesmen and field experts in farm equipment; and (h) superintendents of large farms.

Students majoring in Agricultural Engineering should be well versed in farm practices and have a real interest in the agricultural industry.

The Agricultural Engineering Department has available for its use approximately 6,500 sq. ft. of laboratory space. The farm power and machinery laboratory is equipped to service, overhaul, and maintain internal combustion engines, farm machinery, and heavy-duty equipment. The farm structures laboratory is arranged to develop exercises in the planning and construction of entire farm structures on the model basis. The facilities of the irrigation, drainage, and soil conservation laboratories are ample to conduct both research and class projects. Students deficient in high school mathematics, Algebra (b) and Solid Geometry, must register for Math. 34 during the fall quarter and Math. 33 during the spring quarter of the freshman year. Math. 33 and 34 do not count toward graduation. Candidates for advanced military will be considered special cases in planning Junior and Senior work.
exercises in all their various divisions. These laboratories are housed in the Engineering and Agricultural Engineering Buildings.

CURRICULUM

Degree: Bachelor of Science in Agricultural Engineering.

Freshmen and Sophomore courses—See Basic Courses.

<table>
<thead>
<tr>
<th>Junior</th>
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<td>AE 110</td>
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AE 4. Dairy Mechanics. A study of the basic equipment found in modern dairy plants; their accessories and upkeep. Four credits. Fall, M. W. F. 10; Lab., F. 2-5.

Daines

AE 11. Forging and Bench Metal Work. Fundamental operations of forging such as shaping, bending, forge welding, hardening, and tempering. Use of tools and the fundamental bench operations. Two credits. Fall and Winter, T. Th. F. 11-1, or M. W. F. 11-1.

Staff


Staff

AE 14a. Farm Motors for Agricultural Students. The principles, operation, care, and repair of internal combustion engines and electric motors. Three credits. Winter, T. Th. 11; Lab., Th. 3-6.

Daines

AE 15a. Farm Machinery for Agricultural Students. Principles of mechanics and materials as applied to farm machinery. The operation, adjustment, and care of the various types of agricultural machines. Three credits. Winter and Fall, T. Th. 11; Lab., 3-6.

Daines


Coulam

AE 106. Farm Structures. Economics of Farm Buildings: insulation as it involves heating and ventilating; mechanics of farm buildings; types of construction; building materials; location and planning of the farmstead; fundamental requirements and design of farm buildings common to western agriculture. Sixe credits. Fall, M. W. Th. F. 11; Lab., M. W. 2-5.

Staff


Daines
AE 109. Farm Utilities. Modern methods of heating, lighting, ventilating, water supply, and farm sanitation; and farm electrical appliances. Four credits. Winter, M. W. F. 10; Lab., F. 2-5. Staff

AE 110. Pumps and Pumping. Selection and installation of pumping equipment, theory of pumps, power schedules and cost of pumping. Two credits. Spring, T. Th. 11. Milligan

AE 111. Mechanisms in Farm Machinery. A study of mechanical methods of transmitting motion of farm machines, including cams, gears, universal joints, etc. Fall, T. Th. 10; Lab., Th. 2-5. Staff

AE 115. Farm Implements. Selection, operation, adjustment and care of the various types of agricultural machines. Four credits. Winter, M. W. F. 3; Lab., F. 2-5. Staff

AE 116. Farm Tractors and Repair. A study of design, operation, and performance of the farm tractor. Efficiencies and ratings as determined by the Nebraska Tractor Tests. Tractor troubles and overhauling. Prerequisite, AE 14 or its equivalent. Five credits. Winter, M. W. F. 10; Lab., T. Th. 2-5. Staff

AE 117. Farm Machinery Design. Fundamentals of Farm Machinery Design including draft requirements of farm implements. Selection of metals, stress analysis, layout and construction of farm machines. Five credits. Spring, M. W. F. 10; Lab., T. Th. 2-5. Staff

AE 199. Agricultural Engineering Seminar. Current topics in planning, financing, design, and construction of engineering projects of interest to agricultural engineers. Required of all seniors. Two credits. Winter, T. Th. 9. Staff

AE 212. Problems in Irrigation Agriculture. Advanced work on the major problems in agriculture under irrigation, including management of irrigation projects, consolidation of irrigation companies, formation of soil conservation districts, irrigation efficiencies, erosion control, irrigation and the alkali problem. Instruction in residence or in absentia. Each quarter. Time arranged. Credit according to work done. Israelsen

AE 230. Special Problems in Agricultural Engineering. Independent study of chosen problems in agricultural engineering, given under the direction of a member of the department staff. The student is expected to develop his own initiative in pursuing these problems. Standard formal typewritten reports are required. Prerequisite, Junior standing. Each quarter. Time and credit arranged. Staff

Civil Engineering

O. W. ISRAELSEN, H. R. KEPNER, Professors; C. H. MILLIGAN, DEAN F. PETERSON, Associate Professors; E. M. STOKES*, SPENCER H. DAINES, WILLIS A. TINCEY, Assistant Professors.

Civil Engineering consists of the economic application of the laws, forces, and materials of nature to the design and construction of irrigation and drainage systems, highways, railways, bridges, buildings, dams, water supply systems, hydroelectric plants, and many other works which are a part of the requirements of civilization today.

The curriculum in Civil Engineering has been carefully planned and is accredited by the Engineering Council for Professional Development. It is based upon a thorough training in English, Mathematics, Physics, and Chemistry, combined with drawing, surveying, mechanics, hydraulics, and economics. Upon this substructure is built a superstructure consisting of the applications of these subjects to the many phases of Civil Engineering.

*On leave.
A summer surveying camp is required, and academic work is supplemented by local field trips during the junior year, and a major field trip of approximately two weeks' duration during the senior year. These field trips provide opportunity for first hand study of projects under investigation, construction and after completion. All field trips are carefully planned and are carried out under the joint direction of the faculty and representatives of the work being inspected.

An analysis of the status of the Civil Engineering graduates from the Utah State Agricultural College shows that approximately 80 per cent are in federal, state, city, or county positions, and about 20 per cent in private practice or working for private corporations. Finding employment for graduates has never been a problem at this institution.

The Departments of Engineering are housed in the Engineering Building where well-equipped laboratories and classrooms provide ample facilities for the work in engineering. The irrigation and hydraulic laboratories are equipped with pumps, turbines, water measuring devices, pipe lines, and models of hydraulic structures. A model hydraulic laboratory demonstration unit is available for instruction and laboratory use. The soil mechanics laboratory is equipped with the latest machines and instruments for determining the engineering properties of soil. The laboratories are equipped for testing both metallic and non-metallic materials. Standard testing equipment for determining the physical properties of timber, metals, clay products, concrete and bituminous materials are available. The structural laboratories are equipped for demonstration and investigation of statically indeterminate structures using Begg's method and the Photo-elastic Polariscope.

**CURRICULA**

Degree: Bachelor of Science in Civil Engineering.

Freshman and Sophomore courses—See Basic Courses.

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†SENIOR ELECTIVES

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<td>Bact. 10 CE 144, 194</td>
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**DRAWING AND GENERAL**


†Students may elect other subjects in the College Curriculum than those listed as Senior Electives, under the general supervision of the Dean and will be classed as majors in General Engineering.

CE 63. Descriptive Geometry. Principal and auxiliary views; points, lines, and planes; developments, intersections, and warped surfaces; mining problems. Prerequisite, CE 61. Three credits. Spring, T. 10; Lab., M. W. 2-5.


CE 198. Civil Engineering Seminar. Current topics in financing, design, and construction of engineering projects of interest to civil engineers. Required of all seniors. Two credits. Winter, T. Th. 10.

CE 199. Engineering Conferences. Discussion of the salient and unique features of engineering projects by students, staff members and visiting engineers. Emphasis is placed on the development of extemporaneous ability in students. Required of all seniors. Two credits. Spring, T. Th. 10.

SURVEYING AND HIGHWAYS

CE 65, 66. Engineering Problems. Practical Engineering problems solved by the use of coordinated applications of algebra, trigonometry, calculus, and physics. Methods of computations include the use of logarithms, slide-rule, and calculating machines. Special emphasis is placed upon the development of good habits of work and study. Prerequisites, Math. 97, Physics 22 completed or taken concurrently. One credit each quarter. Winter, Spring, Th. 8-10.

CE 81. Plane Surveying. Use of tape, hand level, level, transit, compass, etc., in field problems. Differential and profile leveling, traversing, plotting, mapping, and care of engineering instruments. Prerequisites, algebra and trigonometry. Three credits. Fall, T. 8, T. Th. 2-5.

CE 82. Mapping and Office Practice. Practice in mapping of the various kinds of surveys that may be encountered by the engineer in working up field notes. Prerequisite, CE 81. Three credits. Winter, W. 1; Lab., M. W. F. 3-5.
CE 83. Plane Surveying. Topographical surveying and mapping, introduction to route surveying, cross-sectioning, some rural and city surveying, and solar observations. Prerequisite, CE 81. Three credits. Spring, T. 8; Lab., T. Th. 2-5.


CE 85. Advanced Surveying. Problems in chaining, leveling, curves, spirals, stadia, and city surveying. Prerequisite, CE 82 or 84. Four credits. Spring, M. W. 8; Lab., M. W. 2-5.

CE 86. Summer Surveying Camp for A.E.s. Surveying office and field practice in camp. Topographic, photogrammetric, land, and hydrographic surveying. The student pays his own transportation and living expenses and a registration fee. Prerequisite, CE 85 or equivalent. Four credits. First three weeks of Summer School.

CE 87. Summer Surveying Camp. Surveying office and field practice in camp. Topographic, land, route, geodetic and hydrographic surveying. The student pays his own transportation and living expenses and the regular summer quarter registration fee. Prerequisite, CE 86 or equivalent. Nine credits. Summer Session.


CE 124. Street and Highway Traffic Control. Collection and analysis of traffic data; causes and remedies for traffic congestion and accidents; traffic control devices; illumination of streets and highways; economics and administration of traffic control. Prerequisite, CE 120. Three credits. Fall, T. Th. 10; Lab., F. 2-5.

CE 125. Highway Design. Theory and practice in the design of rural highways. Preparation of highway plans and profiles, mass diagrams, right-of-way surveys, and drainage features. Prerequisite: CE 85. Three credits. Fall, T. Th. 11; Lab., Th. 2-5.


CE 181. Photogrammetry. The science or art of utilizing photographs of the earth's surface for making surveys, maps and land utilization studies. Planimetric maps, mosaics and restituted photographs, their construction and uses. Prerequisite, CE 83 or senior standing in forest, range or wildlife management, geology, landscape architecture, aviation or advanced military science. Three credits. Fall, M. W. 11; Lab., T. 2-5.

CE 220, b, c. Advanced Highway Engineering. Economics of location and design; selection, improvement and maintenance; traffic control; administration, finance and jurisprudence; as applied to rural and city highways. Prerequisite, graduate standing in civil engineering. Time and credit arranged.

ENGINEERING MECHANICS AND STRUCTURES


CE 102. Engineering Mechanics. The first part of the course covers kinetics of bodies in translation, rotation, and plane motion, relative motion, work and energy, impulse and momentum. The latter part of the course covers
properties of engineering materials, stress and strain due to central and torsional loads. Prerequisite, CE 101. Four credits. Winter M. W. F. 10; Lab., F. 2-4.

CE 103. Engineering Mechanics. Strength of materials, stresses in beams, deflection, combined axial and bending loads, compression members, principal stresses, fatigue, impact and energy loads and special topics. Prerequisite, CE 102. Four credits. Spring, M. W. F. 10; Lab., Th. 9-11.


CE 131, 132. Structural Design Problems. These courses are arranged to provide additional work in the analysis and design of structures for those desiring to specialize in the structural field. Prerequisites, CE 105, 106. Three credits. Winter, M. W. F. 11; Spring, M. W. F. 11.


CE 203. Advanced Structural Design. Design and cost comparisons of timber, steel, and masonry structures. Prerequisite, CE 111. Time and credit arranged.

IRRIGATION AND DRAINAGE

AE 10. Irrigation Principles and Practices for Agricultural Students. A study of factors underlying efficient and economic use of water in irrigation. Irrigation methods and their relation to soils and irrigation efficiencies; the plant and irrigation; irrigation water supply, its physical control and measurement. Four credits. Fall or Spring, M. W. F. 8; Lab., F. 2-4.

AE 12. Irrigation Practice. Sources and conveyance of irrigation water, farm pumping plants, water measurements, preparation of land for irrigation, soil properties and plant characteristics in relation to irrigation, alkali, duty of water, and irrigation efficiencies. Three lectures and one laboratory. Four credits. Fall or Spring, M. W. F. 10; Lab., T. 2-5.

CE 140. Fluid Mechanics Laboratory. A general laboratory course including problems and experiments on the flow of gases and liquids; measurements of flow using Pitot tubes, manometers, nozzles, Venturi meters, orifices, weirs,
Parshall flumes, current meter, pipes and open channels; turbine and pump testing; logarithmic plotting and use of tables and charts. Two credits. Spring, W. F. 2-5.

CE 141. Fluid Mechanics. A general course in Fluid Mechanics, including the fundamental principles of hydrostatics and hydrodynamics applied to flow of water, air, and other fluids. Prerequisites: Physics 21 and Mathematics 99. Three credits. Fall, T. Th. 9; Lab., 2-5.

CE 142. Hydraulics and Hydraulic Problems. Problems in fluid pressure and equilibrium; flow of water through orifices, over weirs, in open and closed channels; turbulent and stream-line flow, non-uniform flow, and water measurement. Prerequisite, CE 141. Three credits. Winter, T. Th. 9; Lab., 2-5.

CE 143. Hydrology and Meteorology. The course treats of the occurrence, utilization, and control of water; weather and climate as they affect the water cycle; precipitation, evaporation, transpiration, and runoff; methods of collection and use of hydrologic data; extension of precipitation and runoff records; precipitation-runoff relations, mass diagrams, duration curves, and flood flows; water supply analysis and stream flow forecasting. Four credits. Fall, M. W. F. 8; Lab., T. 2-5.


CE 147. Design of Water Control Irrigation Structures. Dams, diversion works, sluices, drops and chutes, spillways, wasteways, headgates and check gates. Prerequisite, CE 146. Three credits. Spring, Lect., T. Th. 11; Lab., Th. 2-5.

CE 148. Hydraulic Machinery. Design of machinery used in generation of power and in pumping. Tangential and reaction turbines and centrifugal pumps. Installation and operation. Prerequisite, CE 142. Three credits. Spring, T. Th. 11; Lab., M. 2-5.

CE 149. Irrigation Institutions. Laws governing the acquirement, adjudication and distribution of water rights; reclamation projects, mutual companies, irrigation districts, commercial companies and state water codes. Three credits. Fall, M. W. F. 11.


CE 200. Dams. Advanced work in the design of dams for storage reservoirs. High earth dams and masonry dams given special attention. For graduate students. Open to specially prepared seniors. Two credits. Fall. Time arranged.

CE 241. Irrigation and Drainage Research. The regular research activities of irrigation and drainage staff members afford excellent opportunities for direction of student research projects. A qualified student may elect a problem in any phase of irrigation or drainage in the field of Civil Engineering for study at the College or elsewhere. Results in research may be used in part to meet the requirements of an advanced degree. Credit according to work done. Each quarter. Time arranged. (See also C. E. 201.)  Staff

AE 249. Advanced Irrigation Institutions and Management. Problems in laws governing the acquirement and adjudication of water rights, and in the distribution of water according to established rights; the improvement of irrigation and drainage enterprises; and operation problems. Instruction in residence or in absentia. Each quarter. Time arranged. Credit according to work done.  Staff

CE 242. Advanced Fluid Mechanics. Dynamic lift and propulsion, flow of viscous fluids, resistance of immersed and floating bodies, compressible fluids, and dynamic similarity. Prerequisites: CE 141 and 142. Three credits. Any quarter, time arranged. Staff

CE 250. Advanced Soil Mechanics. Theoretical and laboratory aspects of basic physical properties of soils, with applications to soil problems in agriculture and in engineering. Students are assigned individual laboratory studies. Time arranged. Any quarter. From two to five credits according to accomplishments. Staff

CE 298. Graduate Thesis. Five to eleven credits. Each quarter. Time arranged. Staff

INDUSTRIAL DIVISION
ERNEST C. JEFFSEN, Chairman
AARON NEWEY, D. A. SWENSON, S. R. EGEBERT, Professors Emeritus; S. R. STOCK, FREDERICK PREATOR*, JOSEPH COULAM, LARRY S. COLE, Associate Professors; WILLIAM E. MORTIMER, J. CECIL SHARP, Assistant Professors; BERT V. ALLEN, EDWARD L. FRANCE, CLAYTON CLARK, ANTOINE B. KEMP, CLYDE HURST, ..........., ..........., Instructors.

The Industrial Division is one of the two divisions in the School of Engineering, Industries, and Trades. It is composed of six departments, namely: Aeronautics, Automotive, Metalwork, Radio, Woodwork, and Industrial Education. This division offers three major programs, which are:

I. Industrial Education Program. Teacher training in:
   A. Industrial Arts Education
   B. Trade and Industrial Education

The completion of either curriculum in this program leads to the Bachelor of Science Degree in Industrial Education.

The Master of Science curriculum is available for students who wish to do graduate work in Industrial Education.

II. Technical Institute Program. Technician training in:
   A. Aeronautics
   B. Automotive and Diesel
   C. Metalwork and Mechanical Drawing
   D. Radio and Electronics
The completion of any curriculum in this program leads to the Bachelor of Science Degree in Technology.

III. Vocational Industrial Program. Trade training in:
A. Acetylene and Electric Welding
B. Aircraft and Engine Mechanics
C. Auto Body and Paint Reconditioning
D. Automotive Repair
E. Commercial Photography
F. Carpentry
G. Diesel Repair
H. Machine Shop Practice
I. Radio Service and Repair
J. Refrigeration and Air Conditioning

The completion of any curriculum in this program leads to the Terminal Certificate.

In addition, this Division offers many service courses to accommodate students in other departments on the campus.

I. Industrial Education Program

E. C. Jeppson, Associate Professor; William E. Mortimer, Assistant Professor; Bert V. Allen, Instructor.

The Industrial Education Department offers a program of professional teacher training in Industrial Arts and Trade and Industrial Education. This program continues throughout the regular school year and into summer school. Students can complete their undergraduate work and receive a Bachelor of Science degree in Industrial Education by majoring in Industrial Arts or Trade and Industrial Education.

Industrial Arts

The curriculum in Industrial Arts is designed to meet state certification requirements for the General Secondary and Class A Industrial Arts certificates and is composed of courses in Arts and Sciences, Education, Industrial Arts Technical, Industrial Arts Professional, and basic shop skills. The Arts and Science courses are described in the departments of the School of Arts and Sciences. The Education courses are provided jointly by the School of Education and the Industrial Division of the School of Engineering, Industries and Trades. The general education courses are described in the departments of the School of Education and the descriptions of the technical and professional Industrial Arts courses follow the curriculum in Industrial Arts. The courses in the basic shop skills are described in the departments of the Industrial Division, namely: Aeronautics, Automotive, Metalwork and Mechanical Drawing, Radio, Woodwork, and Industrial Education. The curriculum for the Bachelor of Science Degree in Industrial Arts is as follows:

*On leave.
### CURRICULUM

**Major:** Industrial Arts  
**Minor:** To be selected

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**Industrial Arts—Technical Courses**

**I. E. 42. Plastics.** To acquaint students with the new and important group of plastics materials now being produced and to teach them the fundamental operations used in working these materials. Students will complete projects in hand and machine work that apply to the Industrial Arts program. Two credits. Spring, T. Th. 8-10.  
*Mortimer*

**I. E. 113. Driver Education and Traffic Safety.** This course is designed to acquaint prospective teachers and others with available instructional materials in the field of driver education and the latest methods of presenting such materials in the classroom and on the road. Supervision during practice will be arranged for each student. Three credits. Spring, Lecture, T. Th. 8; Lab., Arranged.  
*Jeppsen and France*

**I. E. 123. Industrial Arts Laboratory.** To teach prospective junior high school industrial arts instructors the application of the skills and knowledge they have acquired in their basic shop courses. Each prospective instructor will construct projects that are suited to the work recommended by the State Department of Education for junior high schools. They will also prepare the necessary lesson plans and teaching aids that will supplement and aid teachers in carrying out the program. Prerequisites: Basic shop courses in Wood, Metal, Electricity, and Crafts. Six credits. Winter, Lecture, M. W. F. 2; Lab., Daily 3-5.  
*Mortimer*
Industrial Arts—Professional Courses

I. E. 102. Instructional Aids. Instruction in the purpose, types, sources, preparation and proper use of audio and visual aids for classroom instruction. The units of this course include samples, models, charts, graphs, slides, still film, movie film, sound film, stereoptican projection, recording, sound systems and other aids suitable for classroom and auditorium use. Three credits. Winter, M. W. F. 9. Jeppesen

I. E. 107. Principles and Objectives of Industrial Arts. To acquaint students with the general philosophy and purposes of Industrial Arts education, and to enable them to understand and appreciate its place in the modern educational program. Students will study and compare the general principles and objectives of Industrial Arts education with those of general education and vocational education. Also, they will correlate the objectives of each State Industrial Arts course with those of the Industrial Arts program. Three credits. Fall, M. W. F. 8. Jeppesen

I. E. 109. Course of Study Building in Industrial Arts. To teach students to prepare and use a course of study consisting of the outline, analysis, progress chart, lesson plans, instruction sheets, references, tests, and instructional schedule. Each student will complete this work for one industrial arts unit of instruction. Three credits. When taught as an extension class and additional work is required, this course may be given for five credits. Winter, M. W. F. 8. Jeppesen

I. E. 110. Shop Organization and Management. To teach students to organize and manage an Industrial Arts shop of the unit, general, or comprehensive type. Each student will prepare for one type of shop, a complete plan of organization and management dealing with the necessary equipment, materials, supplies, methods of purchasing, financial control and problems of shop arrangement. Three credits. Spring. Time arranged. Mortimer

I. E. 112. Observation and Directed Teaching. To give students the opportunity of observation and directed teaching in Industrial Arts shops near the College. Each student will, under close supervision, practice teaching various Industrial Arts courses recommended by the state in both junior and senior high schools. Nine credits. Application for this course should be made one quarter in advance. Winter and Spring. Time arranged. Mortimer

I. E. 121. Instructor Training (Methods). To teach students the latest methods and techniques of teaching as applied to individual and group instruction. Each student will have the opportunity of using these different methods in presenting lessons before the class. Three credits. Fall, M. W. F. 10. Jeppesen

CURRICULUM IN TRADE AND INDUSTRIAL EDUCATION

Degree: Bachelor of Science in Industrial Education

Major: Trade and Industrial Education.

Minor: To be selected.

This curriculum is designed especially for instructors teaching in Vocational Industrial Programs. Candidates for this degree must show evidence of six years successful trade experience and five years successful teaching experience. The trade and teaching experience must be evaluated and approved by a committee consisting of the Director and Department Heads in the Industrial Division. The requirements for this degree are as follows:

A. 60 credits trade training or equivalent
B. 40 credits general group requirements
C. 30 credits education and psychology
D. 20 credits technician training
E. 36 credits recommended electives

186 Total credit hours
TRADE AND INDUSTRIAL—TECHNICAL COURSES

I. E. 61, 61a. Introductory Photography. Training in taking still pictures. The units include selection of materials; exposing and developing of films; contact printing, enlarging, and trimming and mounting of prints. This is the first of a series of six units in commercial photography having as their objective the preparation of technicians in this field. Fall. Technical, four credits. M. T. W. Th. 2; Lab., four credits, Daily 3-5.

I. E. 62, 62a. Industrial Photography. Training in news, architectural, and machine photography. The units include photoflash, interior lighting, action and news, still life, table top, fashion, building, machine, and aerial photography. Blocking, photomontage, and airbrush work also are included. Winter. Technical, four credits. M. T. W. Th. 2; Lab., four credits, Daily 3-5.

I. E. 63, 63a. Agricultural Photography. Training in all types of agricultural, stock, and poultry photography. The units include landscape, garden, flower and plant, livestock, poultry, and farm photography. Spring. Technical, four credits. M. T. W. Th. 2; Lab., four credits, Daily 3-5.

I. E. 64, 64a. Motion Picture Photography. Training in the care and use of 8 and 16 mm. motion picture equipment and materials. The units include motion picture equipment, films and filters, exposure, composition, lighting, editing, and projection. Fall. Technical, four credits, M. T. W. Th. 2; Lab., four credits, Daily 3-5.

I. E. 65, 65a. Portrait Photography. Training in portrait and group photography. The units include model directing, lighting, posing, head and shoulder, three quarter, full length, and group photography. Considerable emphasis will be placed upon child and home portraiture. Winter. Technical, four credits. M. T. W. Th. 2; Lab., four credits, Daily 3-5.

I. E. 66, 66a. Color Photography. Training in the use of color cameras, films, filters, and processing processes. The units include introduction, outline and glossary, kodachrome, kodacolor, tricolor, and printing by imbibition, pigment, and toning. Spring. Technical, four credits. M. T. W. Th. 2; Lab., four credits, Daily 3-5.

TRADE AND INDUSTRIAL—PROFESSIONAL COURSES


I. E. 201. Administration of Industrial Education. The laws, regulations, and policies effecting Industrial Education Programs; organization and management necessary for the successful operation of these programs; and pertinent problems and their solutions. Students prepare a plan of administration suitable to their school or district. Three credits. Winter quarter. Time arranged.

I. E. 202. Supervision of Industrial Education. Latest methods in supervision of Industrial Arts Education and Trade and Industrial Education, for administrators, supervisors, and teachers in service who are responsible for the improvement of industrial arts and vocational education through supervision, or for students who wish to prepare for supervisory work; special attention to supervision of all-day, part-time, and evening programs of industrial arts and vocational education. Students prepare a plan of supervision suitable to their situation. Three credits. Spring quarter. Time arranged.

I. E. 210. Diversified Occupations. The content, methods and special devices to be used in the teaching of Diversified Occupations. Emphasis is
II. Technical Institute Program

Present-day industrial projects are designed by the engineer, interpreted and supervised by technicians, and constructed by skilled tradesmen. The Technical Institute Program is a four-year technical program designed to prepare such technicians for modern industry. The Technological Curricula that follow are described under the departments in which they are listed.

Aeronautics

The department offers instruction for the thorough training of skilled aircraft and aircraft engine mechanics and aeronautical technicians.

Its curricula, equipment, and instructors have been certified, giving it a rating as an approved school for training of aircraft and engine mechanics. Satisfactory completion of the two-year curriculum qualifies graduates to apply for both Civil Aeronautics Administration Government Airplane and Airplane Engine mechanics certificates. This training fits the graduate for both airline and manufacturing employment. Training is based upon the definite objective of scientifically and systematically developing students to a point where they can assume a responsible position in the industry.

The college is a fully certified Air Agency of the Federal Government. It holds Certificate No. 1175 covering training of combined aircraft and aircraft engine mechanics; Certificate No. 2353 covering Repair Station authorization for repair of aircraft of composite construction, aircraft of all-metal construction, aircraft engines, aircraft all-metal propellers and metal hubs, aircraft wood propellers and their metal hubs, and aircraft instruments; also Certificate No. 1899 covering aeronautical ground school for primary and advanced flight students.

The facilities consist of fully equipped aircraft laboratories and class rooms covering approximately 22,000 square feet of area in the Trades and Industries and Engineering Buildings. Complete laboratories and equipment for instruction in air craft engines, propellers, general aircraft mechanics, aircraft electrics, aircraft hydraulics, and aircraft instruments are available. All of these laboratories are equipped with the latest type of engines, propellers, instruments, and other units necessary for training in these fields; such as electro-plating, magneto and carburetor testing, and sandblast equipment. Supplementary to the aircraft laboratories are the Welding, Machine Shop, Sheet Metal, and Woodwork Departments. Modern aircraft are available for instructional purposes, and advanced studies are conducted in the Repair Station under actual conditions met within the industry. All courses are being constantly revised due to the rapid advance of the aircraft industry.
**UTAH STATE AGRICULTURAL COLLEGE**

**CURRICULUM**

Degree: Bachelor of Science in Aeronautics.

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### Description of Courses

The following courses (listing Technical, Shop, and Related) offer respectively, the technical instruction, shop practice, and closely related information for the particular trade. The related information may include Trade Math., W. W. 6, 7, 8; and Trade Problems, Auto 48, 49, 50; or Trade English, English 17, 18, 19; and Trade Drawing, M. W. 91, 92, 93.

**Aero 5, 5a. Composite Aircraft Structures.** (Technical, Shop, and Related.) Training in design, construction, and repair of composite aircraft. Units include wood structures, steel structures, fabric work and finishing, control systems, landing gears, engine mounts, and pertinent Civil Air Regulations. This is an introduction to aircraft: a study of airfoils, types of aircraft, aircraft structures, parts and fittings, design factors, methods of fabrication, materials and processes, stress and strain. Fall. Technical, five credits, Daily 1. Shop, five credits, Daily 2-5. Related, five credits.

**Gilbert**

**Aero 6, 6a. All-Metal Aircraft Structures.** (Technical, Shop, and Related.) Training in design, construction, and repair of all-metal aircraft. Units include lay out, template and flat plate development, bend allowance, hand forming, riveting procedure, special tool construction, power press and power shear operation, heat treatment, corrosion prevention, and pertinent Civil Air Regulations. This is the adaptation of stressed skin aircraft construction: a study of strength, weight, and use of aluminum alloys; design factors; methods of fabrication; fittings, forgings, and extrusions; monocoque, and semi-monocoque structures; stress and strain; material and processes. Winter. Technical, five credits, Daily 1. Shop, five credits, Daily 2-5. Related, five credits.

**Gilbert**

**Aero 7, 7a. Aircraft Maintenance.** (Technical, Shop, and Related.) Training in maintenance, operation, repair and alteration of modern aircraft and miscellaneous equipment. Units include aircraft hydraulics, aircraft instruments, aircraft electrical equipment; installation and general servicing of components; landing gears and retracting mechanisms; rigging; weight and balance computations; engine and propeller installations; periodic inspections;
Aero 8, 8a. Aircraft Powerplants. (Technical, Shop, and Related.) Training in design, operation, and repair of modern air cooled and liquid cooled aircraft engines. Units include power sections, accessory sections, reduction gears, cylinders and valve mechanisms, supercharger sections, and pertinent Civil Air Regulations. This is an introduction to the high performance aircraft internal combustion engine: A study of specifications and tolerances, horsepower curves, M.E.P., B.M.E.P., B.H.P., design factors, magnetic and microscopic inspection methods, materials and processes, volumetric efficiency, and compression ratios. Fall. Technical, five credits, Daily 1. Shop, five credits, Daily 2-5. Related, five credits. Gilbert

Aero 9, 9a. Aircraft Powerplant Accessories. (Technical, Shop, and Related.) Training in design, operation and repair of modern aircraft engine accessories. Units include float and diaphragm type carburetors, fuel injection systems, lubricating systems, magnetos, generators and voltage control systems, batteries, starters; vacuum hydraulic and fuel pumps; pertinent Civil Air Regulations. This is a study of combustion and combustible mixtures, electricity and magnetism, induction systems and superchargers, fuels and lubricants. Winter. Technical, five credits, Daily 1. Shop, five credits, Daily 2-5. Related, five credits. Gilbert

Aero 10, 10a. Aircraft Powerplant Maintenance. (Technical, Shop, and Related.) Training in maintenance, operation, repair and alteration of modern aircraft powerplants. Units include periodic inspections; airline maintenance service; diagnosis of engine malfunctioning; engine installation, test, and servicing; lubricating and fuel systems; hydromatic, constant speed, controllable pitch, and wood propellers; equipment, tool and instrument requirements for repair station operation; major and minor engine repair and alterations; time and material cost estimates; pertinent Civil Air Regulations. This is a thorough study of the operation of an approved Civil Aeronautics Administration Engine Repair Station. Spring. Technical, five credits, Daily 1. Shop, five credits, Daily 2-5. Related, five credits. Gilbert


Aero 119. Aircraft Instruments. A thorough study of instruments and radio used in aircraft and in the control of modern air transportation. Installation and testing of all types of aircraft instruments. Spring. Lecture, M. W. F. 9; Lab, M. W. F. 10, T. Th. 9-11. Five credits. Staff

Aero 122. Advanced Theory of Flight. A study of the field of Aeronautics including the dynamics of perfect fluids, particles, and solids. The general theory of control and stability. Flight demonstration for each student is suggested, but not required. Fall. Lecture, M. W. F. 10; Lab., T. Th. 2-5. Five credits. Staff

Aero 123. Performance Problems of the Airplane. Study of airplane performance, selection of the type of design to be used for a given service, military or commercial. Experimental research, in a chosen field. Three credits. Winter. M. W. F. 10. Staff


Aero 130. Aeronautics Seminar. Current topics in production methods, cost, design, supply and organization of interest to engineers. Two credits. Spring. Time arranged.

AERO 31. Civil Air Regulations. Aeronautical Ground School (Primary). The laws relating to aviation. This is prescribed material required by Civil Aeronautics Administration for private pilot certification. Two credits. Fall, Winter, and Spring, T. Th. 2.

AERO 32. General Service and Operation of Aircraft. Aeronautical Ground School (Primary). The study of the theory of flight; construction, inspection, and care and maintenance of aircraft and aircraft engines. This is valuable for all pilots and aeronautical students. Two credits. Fall, Winter, and Spring. T. Th. 2.

AERO 33. Meteorology. Aeronautical Ground School (Primary). The study of weather, weather maps, structure of the atmosphere, air masses, clouds, forecasting and weather reports. This is Civil Aeronautics Administration prescribed material for any pilot rating above private, and is necessary for all who contemplate flight. Three credits. Fall, Winter, and Spring, T. Th. 3.

AERO 34. Navigation. Aeronautical Ground School (Primary). The study of maps, charts, wind drift, aircraft instruments, radius of action, and other navigation problems. This is Civil Aeronautics Administration prescribed work for any pilot rating above private, and is necessary for all pilots who contemplate flights beyond student practice areas. Two credits. Fall, Winter, and Spring, T. Th. 3.

AERO 37. Private Pilot Certificate. Aeronautical Flight School (Primary). Prerequisite: Aero 31 and 32. Designed to meet C. A. A. requirements for private pilot certificates. It consists of flight training for a minimum of 35 hours or a maximum of 50 hours. This includes at least 17 hours' dual flight instruction and 18 hours' solo flight. Successful passing of all C. A. A. flight and ground tests for the private pilot's certificate is required for satisfactory completion of this course. Medical examination and transportation to and from the airport on a scheduled basis are provided. Equipment consists of airplanes of 65 H.P. or more. Three credits. Fall, Winter, and Spring. Time arranged.


meet requirements of Civil Aeronautics Administration for commercial pilot's certificate. It covers the aerodynamics of the maneuvers comprising the primary flight course with their interpretation and application to heavier aircraft. It also emphasizes precision, cross country flight, and such advanced maneuvers as will further develop the student's knowledge and technique. Some night flying practice it suggested but not required. Successful passing of all C. A. A. flight and ground tests for the Commercial Pilot Certificate is required. Medical examination and transportation to and from the airport on a scheduled basis are provided. Equipment consists of airplanes of 65 HP or more. Minimum total flight hours: 165 plus two hours flight check. Maximum total flight: 210 hours plus two hours flight check. Twelve credits. Fall, Winter, and Spring. Time arranged.

AERO 138. Flight Instructor Certificate. Aeronautical Flight School (Advanced). Prerequisite: Aero 136, 137. Designed to meet C. A. A. requirements for flight instructor certificate. It is similar to prescribed C. A. A. course for training an experienced pilot as flight instructor. It consists primarily of the practical application of elementary and advanced flight instructing in compliance with and according to Civil Air Regulations. Successful passing of all C. A. A. flight and ground tests for the flight instructor certificate is required. Medical examination and transportation to and from the airport on a scheduled basis are provided. Equipment consists of airplanes of 65 HP or more. Maximum total flight hours: 30 hours plus three hours' flight test. Two credits. Fall, Winter, and Spring. Time arranged.

AERO 139. Instrument Rating. Aeronautical Flight School (Advanced). Prerequisite: Aero 136, 137, or commercial pilot certificate. Designed to meet C. A. A. requirements for instrument rating certificate. It consists of advanced problems in flight, navigation, meteorology, and aeronautics. The student is taught to fly aircraft over prescribed routes and areas in all weather conditions by means of instruments and radio alone. The flight work involves clear weather and bad weather practice, under the hood flying, the various methods of using radio beacons and sectors, the use of electronic flying aids, instrument take-offs and landings, homing devices, radio compasses, and direction finders. Successful passing of all C. A. A. flight and ground tests for the instrument rating certificate is required. Medical examination and transportation to and from the airport on a scheduled basis are provided. Equipment consists of airplanes of 100 HP or more. Maximum total flight hours: 40 hours plus three hours' flight test. Two credits. Fall, Winter, and Spring. Time arranged.

AERO 140. Flight Instructor Training. Aeronautical Flight School (Advanced). Prerequisite: Aero 136 and 137, or commercial pilot certificate. Consists of a study of elementary and advanced flight maneuvers with their breakdown analysis for instructional purposes. A comprehensive study of description, nomenclature, terms, and factors relating to efficiency are also included. Successful passing of all C. A. A. flight and ground tests for flight instructor training certificate is required. Medical examination and transportation to and from the airport on a scheduled basis are provided. Fall, Winter, and Spring quarters. Three credits. Time arranged.

AERO 141. Instrument Flying. Aeronautical Ground School (Advanced). Prerequisite: Aero 136, 137 or commercial pilot certificate. Consists of a study of the problems of Instrument Flying. The work includes a study of the six degrees of freedom, the instrument panel, the Sperry pilot, blind landings, description of instruments, relation between instruments, how to use the 1-2-3 order, the "amount" instrument group, the "rate" instrument group, radio, and radio beacons. Successful passing of all C. A. A. flight and ground tests for the Instrument Flying is required. Medical examination and transportation to and from the airport on a scheduled basis are provided. Five credits. Fall, Winter, and Spring. Time arranged.
Automotive

S. R. Eghert, Professor Emeritus; E. C. Jeppsen, Associate Professor; J. C. Sharp, Assistant Professor; Edward L. France, Antone B. Kemp, Clyde Hurst, Instructors.

This department offers work in automotive mechanics, auto body and paint reconditioning, diesel, forging, refrigeration and air conditioning, acetylene and electric welding. It provides general courses open to any college student and specialized courses in Trades and Industries. The general courses open to any student are Auto 37, 51, 52, 53, 61, 62, 81, 82, 83, 91, 92, 93, and 162. The remaining courses are in the nature of specialized technical training to be taken in the order as indicated in the course description.

The Automotive Department is located in the center of the Trades and Industries building, and occupies a floor space of approximately 11,000 square feet. It is fully equipped with the latest tools and shop equipment in automotive repairing, auto electrics and carburetion, auto body and paint reconditioning, forging, welding, refrigeration and air conditioning. The department accommodates approximately 200 students.

The Bachelor of Science Degree may be taken in Automotive, Diesel, Refrigeration and Air Conditioning, or Welding Technology. A major in these fields prepares a student as an automotive, diesel, refrigeration and air conditioning or welding technician who can better interpret the designs of the engineer and direct the work of the repairman. This major also prepares a student for work as a shop foreman, shop superintendent or as a trade instructor. Students wishing to better prepare themselves for graduate study at other institutions in automotive, diesel, refrigeration and air conditioning, welding, or closely allied fields of engineering, may do so by substituting certain prescribed courses during their junior and senior years.

CURRICULUM IN AUTOMOTIVE TECHNOLOGY

Degree: Bachelor of Science in Automotive Technology.

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For major in Diesel, substitute Auto 21 to 26 and Auto 21a to 26a for Auto 1 to 6 and Auto 1a to 6a.
For major in Refrigeration and Air Conditioning, substitute Auto 31 to 36 and Auto 31a to 36a for Auto 1 to 6 and Auto 1a to 6a.

For major in Welding, substitute Auto 41 to 46 and Auto 41a to 46a for Auto 1 to 6 and Auto 1a to 6a.

Description of Courses

The following courses (listing Technical, Shop, and Related) offer respectively, the technical instruction, shop practice, and closely related information for the particular trade. Trade Math. W. W. 6, 7, 8; Trade Problems, Auto 48, 49, 50; or Trade English; Eng. 17, 18, 19; and Trade Drawing, M. W. 91, 92, 93, are offered as the related courses for the two year terminal certificate.

Auto 1, 1a. Steering Correction. (Technical, Shop, and Related.) Training in the construction, operation, and repair of the parts of the automobile chassis. The units covered are axles, wheels, control linkage, wheel suspension, steering gears, wheel alignment, wheel balancing, frame straightening, and brakes. Modern methods of repair. Fall. Technical, five credits. Daily 9; Shop, five credits, Daily 10-1; Related, five credits. Hurst

Auto 2, 2a. Automotive Engines. (Technical, Shop, and Related.) Training in the construction, operation, and repair of the modern automobile engine. The units of this course include cylinder blocks, piston assemblies, crankshaft assemblies, valve assemblies, cooling and lubricating systems. Modern methods of repair. Winter. Technical, five credits. Daily 9; Shop, five credits. Daily 10-1; Related, five credits. Hurst


Auto 4, 4a. Fuel Systems. (Technical, Shop, and Related.) Training in the construction, operation and repair of the modern automobile engine. The units of this course include the battery, lighting systems, ignition systems, starting and generating systems. Modern methods of repair. Fall. Technical, five credits. Daily 9; Shop, five credits. Daily 10-1; Related, five credits. France

Auto 5, 5a. Auto Electrics. (Technical, Shop, and Related.) Training in the construction, operation and repair of the electric systems used on the modern automobile. The units in this course include the battery, lighting systems, ignition systems, starting and generating systems. Modern methods of repair. Winter. Technical, five credits. Daily 9; Shop, five credits. Daily 10-1; Related, five credits. France

Auto 6, 6a. Motor Tune-up. (Technical, Shop, and Related.) This work correlates the work covered on engines, carburetion and electrics. Tests for troubles will be made with modern tune-up equipment and these troubles remedied by trade accepted methods. Spring. Technical, five credits. Daily 9; Shop, five credits. Daily 10-1; Related, five credits. France

Auto 12, 12a. Fender Reconditioning. (Technical, Shop, and Related.) Training in the roughing out, shrinking, leading, buffing, sanding, and metal finishing of fenders. Fundamental principles and practice of oxy-acetylene welding which prepares the student to do the light welding necessary in auto body repairing. Fall. Technical, five credits. Daily 9; Shop, five credits. Daily 10-1; Related, five credits. Staff

Auto 13, 13a. Body Reconditioning. (Technical, Shop, and Related.) Training in the major auto body repairs and replacement of body parts. Units include the checking and alignment of the automobile body, repair and replacement of damaged body panels such as the dash, cowl, trunk, rocker, floor, side, top and door panels; also door and cowl ventilator regulators, door and seat adjusters, and windshield wiper mechanisms. Attention will also be
given to the cutting, grinding, and replacing of auto body glass. Winter. Technical, five credits. Daily 9; Shop, five credits. Daily 10-1; Related, five credits. 

**Auto 15, 15a. Automotive Trimming and Refinishing.** (Technical, Shop, and Related.) Training in the repair and replacement of all auto body trim, the preparation of body metal for the various kinds of finishes, and the application of these finishes. Units covered will include repair and replacement of floor coverings, door and rear quarter trim, head lining, cowl panels, seat cushions, windshield and accessories. Practice also will be given in metal preparation, priming, surfacing, application of color, and in spotting, striping, and sanding. Spring. Technical, five credits. Daily 9; Shop, five credits. Daily 10-1; Related, five credits. 

**Auto 21, 21a. Stationary Diesel Engines.** (Technical, Shop, and Related.) Training in the construction, operation, and maintenance of stationary Diesel engines. This course covers two-stroke cycle and four-stroke cycle stationary engines and accessories of the farm and auxiliary types. Fall. Technical, five credits, Daily 9. Shop, five credits, Daily 10-9. Related, five credits. 

**Auto 22, 22a. Automotive Diesel Engines.** (Technical, Shop, and Related.) Training in the construction, operation, and maintenance of automotive Diesel engines. This course covers two-stroke cycle and four-stroke cycle automotive, truck and tractor engines together with their accessories. Winter. Technical, five credits, Daily 9. Shop, five credits, Daily 10-1. Related, five credits. 


**Auto 31, 31a. Domestic Refrigeration, Open Types.** (Technical, Shop, and Related.) Training in the construction, operation, servicing, and repair of domestic refrigerators of the open type. The units include compression cycle, compressors, automatic controls, refrigerants, electric motors, and accessories used in open type domestic refrigeration systems. This is the basic course for all vocational students in refrigeration. Fall. Technical, five credits, Daily 8. Laboratory, five credits, Daily 9-12. Related, five credits. 

**Auto 32, 32a. Domestic Refrigeration, Sealed Types.** (Technical, Shop, and Related.) Training in the construction, operation, servicing, and repair of domestic refrigerators of the sealed type. The units include hermetic compression cycles, hermetic compressors, absorption cycles, automatic controls, electric motors, and accessories used in sealed type domestic refrigeration systems. Service and repair of cabinets used in domestic refrigerators are also included. Winter. Technical, five credits, Daily 8. Laboratory, five credits, Daily 9-12. Related, five credits. 

**Auto 33, 33a. Commercial Refrigeration, Single Systems.** (Technical, Shop, and Related.) Training in the construction, operation, servicing and repair of single system commercial refrigerators. The units of this course include commercial boxes, commercial compressors, condensers, evaporators, pressure reducing devices, and controls. The course emphasizes the calculation and selection of proper size units so that a complete commercial refrigeration system will operate correctly. Special work will be done in studying and testing commercial refrigerators in actual operation in relation to capacity, efficiency, and operating characteristics. Spring. Technical, five credits, Daily 8. Laboratory, five credits, Daily 9-12. Related, five credits. 

**Auto 34, 34a. Commercial Refrigeration, Multiple Unit.** (Technical, Shop, and Related.) Training in the construction, operation, servicing, and repair of multiple type commercial refrigerators. The units include commercial low side floats, two-temperature valves, electric solenoids, two position and modulating shut-off valves, Temprite valves, pressure controls, and carbonators. Multiple units are assembled, run, and tested for the various service problems encountered in commercial servicing of high, medium, and low temperature work. Fall. Technical, five credits, Daily 1. Laboratory, five credits, Daily 2-5. Related, five credits.
Auto 35, 35a. Air Conditioning, Domestic Types. (Technical, Shop, and Related.) Training in the design, construction, operation, servicing, and repair of domestic air conditioning equipment. The units include sling psychrometers, psychrometric charts, humidistats, thermostats, desert coolers, unit air-conditioners, filters, U tube water gauges, draft gauges, hygrometers, and anamometers. Technical, five credits. Daily 1. Laboratory, five credits, Daily 2-5. Related, five credits.

Auto 36, 36a. Air Conditioning, Commercial Types. (Technical, Shop, and Related.) Training in the design, construction, operation, servicing, and repair of commercial air conditioning equipment. The units consist of air conditioning compressors, evaporators, duct work, air conditioning controls, pitot tubes, decibel meters, psychological aids, and comfort charts. A typical commercial air conditioning unit will be assembled and used for analyses and correction of operational difficulties encountered in this type of equipment. Spring. Technical, five credits, Daily 1. Laboratory, five credits, Daily 2-5. Related, five credits.

Auto 37. Household Refrigeration. Principles and practices in construction, operation, and servicing of modern household refrigerators and home freezer equipment. The units of the course include motors, compressors, freezing units, temperature controls, and cabinets. Open to any college student. Three credits. Fall, Winter and Spring. Lecture T. Th. 2. Laboratory T. Th. 3-5.

Auto 41, 41a. Acetylene Steel Welding. (Technical, Shop, and Related.) Training in fusion welding and cutting of mild steel by means of oxy-acetylene welding equipment. Various techniques and welding positions are studied and practiced, and the A. S. M. E. standard tensile test is made on samples welded in flat position. Included in this course is a careful study of the equipment and safety factors involved. Fall. Technical, five credits. Daily 9; Shop, five credits. Daily 10-1; Related, five credits.

Auto 42, 42a. Acetylene Cast-Iron Welding. (Technical, Shop, and Related.) Training in fusion welding, bronze welding, and cutting of cast iron and malleable castings with oxy-acetylene welding equipment. Special problems in the preheating of castings are introduced. Also some attention is given to welding of heavy steel. A. S. M. E. standard tensile tests are made on steel specimens welded in the horizontal position. Winter. Technical, five credits. Daily 9; Shop, five credits. Daily 10-1; Related, five credits.

Auto 43, 43a. Acetylene Aluminum Welding. (Technical, Shop, and Related.) Training in the welding of aluminum, duraluminum, chrome-molybdenum, inconel, stainless steel, miscellaneous alloys and non-ferrous metals with the oxy-acetylene welding equipment. Some attention is also given to pipe welding, hard surfacing and flame hardening. A. S. M. E. standard tensile tests are made on steel specimens welded in the vertical and overhead position. Spring. Technical, five credits. Daily 9; Shop, five credits. Daily 10-1; Related, five credits.

Auto 44, 44a. Electric Steel Welding. (Technical, Shop, and Related.) Training in fusion welding of mild steel by means of electric-arc welding equipment. Various techniques and welding positions are studied and practiced, and the A. S. M. E. standard tensile test is made on samples welded in flat position. Included in this course is a careful study of the equipment, and safety factors involved. Fall. Technical, five credits. Daily 9; Shop, five credits. Daily 10-1; Related, five credits.

Auto 46, 46a. Electric Aluminum Welding. (Technical, Shop, and Related.) Training in the welding of aluminum, duraluminum, chrome-molybdenum, inconel, stainless steel, miscellaneous alloys and non-ferrous metals with the electric-arc welding equipment. Some attention is also given pipe welding and hard surfacing. A. S. M. E. standard tensile tests are made on steel specimens welded in the vertical and overhead positions. Spring. Technical, five credits. Daily 9; Shop, five credits. Daily 10-1; Related, five credits.


Auto 51. Automobile Chassis. Principles and practice in the construction, operation, and servicing of the modern automobile chassis. The units of the course include axles, wheel suspension, steering gears, frames, springs, universals, drive shafts, and brakes. Open to any college student. Three credits. Fall, Lecture, T. Th. 2; Lab., T. Th. 3-5.

Auto 52. Automobile Power Plants. Principles and practice in the construction, operation, and servicing of the modern automobile power plant. The units of the course include cylinder block assemblies, piston assemblies, crank-shaft assemblies, valve assemblies, clutches, transmissions, overdrives; fuel, cooling and lubricating systems. Open to any college student. Three credits. Winter, Lecture, T. Th. 2; Lab., T. Th. 3-5.

Auto 53. Automobile Electricity. (Prerequisite, Auto 52.) Principles and practice in the construction, operation, and servicing of the electrical systems used on the modern automobile. The units to be covered include starting, generating, lighting, ignition, and special accessory systems. Three credits. Spring, Lecture, T. Th. 2; Lab., T. Th. 3-5.

Auto 61. Body and Fender Repair. Principles and practice in the fundamentals of fender and body repairing, including work in metal finishing, light welding, door and body alignment. Open to any college student. Three credits. Fall, Lecture, T. Th. 2; Lab., T. Th. 3-5.


Auto 81, 82, 83. Forge Practice. Training in the fundamental operations of forging such as shaping, bending, drilling, hardening, tempering, and forge welding. This course will prepare the student to do successfully the forging jobs in repair shops, construction camps, and industrial maintenance shops. This training is necessary for all acetylene and electric welders and other metal workers entering present-day industries. Open to all students in agriculture, engineering, industrial arts, and trades and industries. Five credits each course. Part of these courses may be taken any one quarter: 81a, first three credits; and 81b, last three, or 81d, last two credits of the course. Fall, Winter, and Spring. Daily 2-5.

Auto 84. Ornamental Iron Work. Designing and making of iron furnishings, fences, gates, frillices, jardinieres, sign brackets, etc. Prerequisites, Auto 81a. Two credits. Spring, T. Th. F. 11-1.

Auto 91. Acetylene Welding. Principles and practice in the fundamentals of oxy-acetylene welding and cutting. A general course open to any college student. Three credits. Fall, Winter, or Spring. Lecture, T. Th. 2; Lab., T. Th. 3-5.

Auto 92. Aero Welding. (Prerequisite, Auto 91.) Principles and practice in welding steel and alloy steel tubing as practiced in aircraft construction and repair. Three credits. Winter. Lecture, T. Th. 2; Lab., T. Th. 3-5.

Auto 93. Advanced Aero Welding. (Prerequisite, 92.) Principles and practice in welding aluminum, duraluminum, chrome-molybdenum, inconel, stainless steel, and other alloys used in the manufacture and repair of aircraft. Three credits. Spring. Lecture, T. Th. 2; Lab., T. Th. 3-5.
Auto 96. Engineers Welding Laboratory. Exploration in modern welding. Students receive basic instruction and practice in the use of oxy-acetylene welding and cutting, electric arc welding, and spot welding equipment. Two credits. Fall, Winter, and Spring, T. Th. 8-11.

Auto 151. Carburetion. (Prerequisite, Auto 52 or its equivalent.) Advanced technical training in fuels and carburetion as applied to the modern automobile. Emphasis will be placed on the selection, installation, operation, and maintenance of the automobile starting motor, generator, and their controlling devices. Three credits. Fall, Lecture, M. W. 2; Lab., M. W. 8-5.

Auto 152. Motors and Generators. (Prerequisite, Auto 53 or its equivalent.) Advanced technical training in the principles, construction, operation and repair of the automobile starting motor, generator, and their controlling devices. Three credits. Winter, Lecture, M. W. 2; Lab., M. W. 3-5.

Auto 153. Magnetos. (Prerequisite, Auto 53 or its equivalent.) Advanced technical training in the principles, construction, operation, and repair of low and high tension magnetos and their accessories. Three credits. Spring, Lecture, M. W. 2; Lab., M. W. 3-5.


Auto 191. Electric Welding. (Prerequisite, Auto 91.) Principles and practice in the use of the latest types of electric-arc welding equipment. Safety measures and methods used in arc-welding of steels, cast iron, and non-ferrous metals. Instruction in oxy-acetylene welding of cast iron and torch cutting of steel will be offered. Three credits. Winter. Lecture, M. W. 2; Lab., M. W. 3-5.

Auto 192. Resistance Welding. (Prerequisite, Auto 191.) Principles and practice in the welding of iron, steel and non-ferrous metals by means of spot welding and other types of resistance welding equipment. Some attention will be given to the welding of bronze, aluminum, and other non-ferrous metals, and surfacing with acetylene and electric equipment. Three credits. Spring, Lecture, M. W. 2; Lab., M. W. 3-5.

Metalwork and Mechanical Drawing

LEON NEWEY, Professor Emeritus; FREDERICK PREATOR*, Associate Professor.

This department offers work in mechanical drawing, blue print reading, machine shop practice, sheet metal work, ornamental metal work, and metal and heat treatment. It also provides the necessary course for Bachelor of Science Degree in Trades and Industries with a major in Metalwork, a terminal art course in the machine shop trade, and service courses that may be used toward satisfying the teacher training curriculum in Industrial Arts. Also, the service courses in Mechanical Drawing are provided for the Industrial Division.

The degree course in Metalwork offers to young men with special aptitudes a mechanical work, drafting, and mathematics, an excellent opportunity to win for machine-work and tool-making, and also lays a foundation for entering such allied fields as machine designers, master mechanics, trade teachers, and airplane mechanics or designers and several branches of engineering.

The shop courses in the department give good training for students who are studying for a career where mechanical work is needed. Students preparing for engineering, electrical work, auto mechanics, aviation, tractor work, farm machinery, and those interested in model building and experimenting will find these courses suited to their needs.
The department has a floor space of 5,080 square feet. The machine shop is equipped with the following machine tools: 25 lathes, 3 milling machines, 3 shapers, 1 planer, 2 universal cutter grinders, 1 surface grinder, 1 power hacksaw, 5 drill presses, 5 tool grinders and 1 Doall machine.

The shops are well supplied with machinist hand tools such as vises, bent tools, reamers, gauges, twist drills, taps, dies, micrometers, and other measuring tools and also facilities and tools for ornamental and sheet metal work.

The department also has a heat treating laboratory equipped with Electric Furnaces, tensile test machine, hardness testing machine and polishing equipment for preparing metal specimens.

**CURRICULUM**

**Degree:** Bachelor of Science in Metals.

**Freshman**

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<td>4 F 4 W 4 S</td>
</tr>
<tr>
<td>Physio. 105</td>
<td>3 F 3 W 3 S</td>
</tr>
<tr>
<td>Electives</td>
<td>16 F 15 W 17 S</td>
</tr>
</tbody>
</table>

**Description of Courses**

All courses in Metalwork are open to vocational students.

Any five-credit course in Machine work may be completed by taking part of the course during one quarter and the other part during a later quarter. The letters A, B, C, D attached to any five-credit course number indicate, respectively, two credits, three credits, three credits, and two credits. A and B indicate the first part of the course and C and D the latter part. For example: 51a, 2 credits; 51b, 3 credits; 51c, 3 credits; 51d, 2 credits.

**MW 40. Sheet Metal.** This course gives practice in the fundamental operations and tool processes of sheet metal work. Articles are made from black iron, galvanized iron, and bright tin that give practice in pattern developing, cutting, slodering, seams, riveting, wiring, etc. The training needed for teaching sheet metal work in high schools will receive due consideration during the course. Two credits. Spring, M. W. F. 10-12.

**MW 41. Art Metalwork.** This course consists of laboratory work in casting, embossing, sinking, engraving, etching and metal spinning operations. The work is done in copper, brass, pewter, and aluminum on projects designed for utility
SCHOOL OF ENGINEERING 197

and artistic merit. Prerequisites, Art 4 or 37, Machine Work 51b. Senior college students may register for MW 141. Two credits. Spring. M. W. F. 10-12.

MW 50. Metals and Heat Treatment. The course is a study of the physical properties, composition, constituents, and heat treatment of metals used in industry. The metals and heat treatement studies will include cast iron, wrought iron, plain carbon steel, alloy steels, brasses, bronzes, aluminum alloys and magnesium alloys. Three credits. Any quarter. Time arranged. Newey

MW 51, 52. Training in the use of hand tools, and in bench work and tool sharpening, together with elementary training on drill press and engine lathe. Tools and machine parts are made that give practice in the operations essential in machine shop work. Included are assignments of reading on machine work subjects, and application of mathematics to machine work. Five credits, each course. Fall, Winter, Daily 9-12 and 2-5. Newey

MW 53. Machine Practice. (Shaper and Milling Machines.) An introduction to work on the shaper, planer, and milling machines. A program is outlined to develop the student's ability on these machines so as to give him a broader training for advanced work. Five credits. Spring. Prerequisites: MW 51 and 52.

NOTE: Two and three credit courses in Machine Practice are scheduled each quarter. See Time Schedule Bulletin.


MECHANICAL DRAWING

The drafting laboratory, with a floor space of 1,600 square feet, is well lighted and equipped to handle a class of 40 students at individual drafting tables. Modern equipment such as Universal drafting machines, the different printing machines, and printing processes are made available to the students.

The mechanical drawing classes M. W. 91, 92, 93, are basic courses, offered as service courses to all departments. Special emphasis is put on fundamentals of good shop practices used on drawings common in industry.

MW 91, 92, 93. Mechanical Drawing. The use of instruments and types of lettering on template drawings and graphic solutions; standard elements and symbols which make up mechanical drawings used in industry. The theory of shape and its representation in orthographic projections, sections, auxiliary views, revolutions, and size description. Isometric drawings and the translation of orthographic into pictorial drawings. Two credits each course. MW 91, Fall, T. Th. 10-12 or 2-5. Winter, M. W. F. 10-12. MW 92, Winter, T. Th. 10-12 or 2-5, Spring, M. W. F. 10-12. MW 93, Spring, T. Th. 10-12 or 2-5. Preator


MW 96. Aircraft Drawing and Blue Print Reading. Problems common to the aircraft industry are used. The special aircraft methods of representation, aircraft numbering systems, change methods, classes of prints and technical specifications are stressed. Prerequisites, MW 91, 92, 93. Three credits. M. W. F. 10-12.

Radio

S. R. Stock, Larry S. Cole, Associate Professors; Clayton Clark, Instructor.

The Department offers a standard four-year curriculum leading to the Bachelor of Science Degree in Radio Technology. The courses are planned to provide a thorough fundamental technical education in the various phases of radio and electronics.

The unusual growth and development in the fields of radio, communication and electronics has created a constantly increasing demand for well-trained engineers, technicians, operators and maintenance men. Graduates and former students of this Department have found excellent positions and opportunities. A record of past graduates show employment in the following major fields: Radio Broadcasting—Engineers and Operators; Civil Service—Radio Engineers and Technicians; Industrial—Radio Engineers and Technicians; Radio Servicing—Technicians.

The Department of Radio maintains extensive contacts with industrial and government agencies that employ technically trained radio men, and gives employment assistance to students who have completed various phases of training.

The Radio Department has extensive laboratory space, modern equipment and a well-trained staff. Among the equipment available are: radio transmitters from 25 to 1000 watts, both commercial and composite types; a large number of commercial communications receivers; a completely equipped broadcasting studio with all monitoring and recording equipment; a comprehensive stock of radio testing and measuring equipment, and an excellent stock of radio parts and tubes for instruction and experimental purposes.

In addition to the regular B.S. degree course, the Radio Department offers a one-year vocational industrial type course in radio service and repair.

CURRICULUM

Degree: Bachelor of Science in Radio Technology

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Course</th>
<th>Credits</th>
</tr>
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<tr>
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<td>F 5 W 5 S 5</td>
<td>Radio 80, 81, 84</td>
<td>F 5 W 5 S 5</td>
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<td>Radio 31, 32, 33</td>
<td>F 1 W 1 S 1</td>
<td>Math. 97, 98, 99</td>
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<td>Physics 20, 21, 22</td>
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<td>Engl. 17, 18, 19</td>
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<td>M. S. 4, 5, 6</td>
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<td>M. W. 91</td>
<td>F 2 W 2 S 2</td>
<td>M. W. 51a</td>
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<td>M. S. 1, 2, 3</td>
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<td>F 15 W 20 S 17</td>
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</table>
## Description of Courses

Radio 1, 2, and 3 constitute the one-year Vocational Industrial Course in Radio Maintenance and Repair.

### 1. Radio Circuits. (Technical, Shop and Related.)
Training covering radio, electricity and circuits; use and care of radio tools and test instruments; testing for and repairing of ordinary troubles. Fifteen credits. Fall, Daily.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Radio 124, 125, 126</td>
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<tr>
<td>Radio 150</td>
<td>F 2 W 2 S 2</td>
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<tr>
<td>Radio 110</td>
<td>F 4 W 4 S 4</td>
</tr>
<tr>
<td>Math. 122</td>
<td>F 3 W 3 S 3</td>
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<td>Econ. 51</td>
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<td>Speech 51</td>
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<td>Chem. 10, 11, 12</td>
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<td>F 16 W 16 S 16</td>
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</table>

### 2. Radio Receivers. (Technical, Shop and Related.)
A continuation of Radio 1 covering radio receivers' circuits; testing, diagnosis and repair of ordinary receivers. Fifteen credits. Winter, Daily.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<td>Radio 150</td>
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<tr>
<td>Radio 140, 141</td>
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<td>F 3 W 3 S 3</td>
</tr>
<tr>
<td>Total</td>
<td>F 16 W 16 S 16</td>
</tr>
</tbody>
</table>

### 3. Special Radio Receivers and Equipment. (Technical, Shop and Related.)
A continuation of Radio 1 and 2 covering the circuits, adjustments and maintenance of high fidelity, all wave and F. M. receivers; sound systems and other radio equipment. Fifteen credits. Spring, Daily.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>Radio 150</td>
<td>F 2 W 2 S 2</td>
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<td>Radio 140, 141</td>
<td>F 4 W 4 S 4</td>
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<tr>
<td>Physics 175, 176, 177</td>
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<td>Engl. 111</td>
<td>F 4 W 4 S 4</td>
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<td>C. E. 197</td>
<td>F 4 W 4 S 4</td>
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<tr>
<td>Electives</td>
<td>F 3 W 3 S 3</td>
</tr>
<tr>
<td>Total</td>
<td>F 16 W 16 S 16</td>
</tr>
</tbody>
</table>

### 23. Radio Electricity. Fundamentals of electricity; direct current circuits and circuit components; magnets and magnetism. Laboratory work covers soldering, wiring, use of diagrams and construction of several types of simple radio receivers. Five credits. Fall, M. W. F. 11; Lab., T. Th. 2-5.


### 31, 32, 33. International Code Practice. These courses will train the beginner to send and receive correctly 15 to 20 words per minute. The actual speed attained will depend on individual ability. Required of all students majoring in radio. One credit each quarter. Fall, Winter, and Spring, M. W. 12.


### 84. Instruments and Measurements. The principles, construction and application of modern radio testing and measuring equipment; methods and techniques of testing electronic equipment. Five credits. Spring, M. W. F. 1; Lab., T. Th. 2-5.

### 88. Forest Service Radio and Telephone. A course designed especially for students in Forestry. Proper methods of operation, installation, station procedure, and communication practice will be given. The laboratory work will be done in the field, using standard Forest Service radio and telephone equipment. Telephone operation, line construction, and methods of locating and
repairing common phone troubles. The Forest Service office at Ogden is furnishing the necessary telephone and radio equipment for the course. Two credits. Spring, T. Th. 2-5.

89. Receivers and Transmitters. An introductory course covering the principles of radio communication systems, receivers, transmitters, and antennas. Laboratory work covers the construction, operation and adjustment of the fundamental units. Five credits. Spring, M. W. F. 10; Lab., T. Th. 2-5.

101. Practical Electricity. This course will include a study of the fundamental principles of electricity and their application in the construction of such projects as bell circuits, house wiring, electro-magnets, heating elements, motors, electric soldering irons, transformers, and other common electrical devices. Four credits. Spring, Three lecture-labs. per week. Time arranged.

110. Communication Circuits. Principles and characteristics of transmission lines, networks, matching sections and filters used in communication systems. Four credits. Spring, M. W. T. Th. 1.

120. Antennas. Fundamentals of radio antennas, radiation and wave propagation; adjustment and construction of all types of Marconi and Hertzian antennas; directional arrays; feeder lines and matching networks; antennas and field strength measurements. Four credits. Fall, M. W. F. 11; Lab., W. 2-5.


125. Audio Frequency Amplification. A course covering the principles, characteristics, and construction of resistance, impedance and transformer coupled audio amplifiers; audio circuit constants and measurements; Class A, AB and B power amplifiers. Four credits. Winter, M. W. F. 9; Lab. W. 2-5.


129. Sound, Recording and Studio Techniques. Principles of acoustics; microphone and speaker characteristics; theater and outdoor sound systems; instantaneous recording; motion picture recording and reproduction; specialized audio amplifiers. Laboratory work consists of recording and studio arrangements, sound system installations and acoustic measurements. Prerequisites: Radio 124, Radio 135. Four credits. Spring, M. W. F. 11; Lab. W. 2-5.

140, 141. UHF Techniques. Principles of production, transmission and reception in the UHF spectrum. Applications of UHF transmissions, such as FM, television and special devices. Four credits. Winter, Spring, M. W. F. 9; Lab., W. 2-5.

150. Advanced Laboratory Work. Advanced radio laboratory work in construction of equipment and communication units; measurements and laboratory technique. For junior and senior students majoring in Radio. Two credits per quarter up to a maximum of 10 credits. Any quarter. Two labs. per week. Time arranged.

175. Radio Seminar. A weekly meeting of staff and upper division Radio majors. Reports and discussions on recent developments in the fields of communications and electronics. One credit each quarter up to a maximum of five credits. F. W. S. Time arranged.
Woodwork and Building Construction

A. A. Swenson, Professor Emeritus; Joseph Coulam, Associate Professor; William E. Mortimer, Assistant Professor.

The Woodwork Department occupies the center and south wing of the second floor of the Mechanic Arts Building, containing 5,418 square feet of floor space. In this space is housed machine rooms, bench room, stock room, finishing room, classroom, and office.

The shops are well lighted, well equipped with woodworking machines, and accommodate approximately 35 students at one time.

This department offers work in joinery and millwork, building construction, estimating and contracting, pattern making, wood turning, wood finishing, house decorating, home mechanics, and cabinet work. It provides the necessary courses for the Bachelor of Science degree in Woodwork and Building Construction; it provides for a two-year terminal course in Carpentry and Building Construction; and service courses that may be used toward satisfying the curriculum in Industrial Arts.

CURRICULUM

Degree: Bachelor of Science in Woodwork and Building Construction.

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Credits</th>
<th>Sophomore</th>
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<tbody>
<tr>
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<td>T. W. 60</td>
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<td>Speech 5</td>
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<td>Art. 68</td>
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<tr>
<td>18</td>
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<table>
<thead>
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<th>Junior</th>
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<th>Senior</th>
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<td>Course</td>
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<td>W</td>
<td>S</td>
</tr>
<tr>
<td>Br. 126</td>
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<td>Eng. 110</td>
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<tr>
<td>Physics 20, 22</td>
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<td>T. W. 171, 172a</td>
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<td>Geo. 111</td>
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<td>T. W. 170</td>
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<td>18</td>
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</tbody>
</table>

Courses WW 61, 62, 63, 74, 171, 172, 173 may be completed by taking part of the course during one quarter and the other part during a later quarter. The letters A, B, C, D are used to designate the subdivisions of these courses. Thus, A represents the first two credits of the course; B represents the first three credits; C, the last three credits and D, the last two credits. The three-hour courses are offered 9-12 M. W. F. each quarter, and the two-hour courses are offered 9-12 T. Th. each quarter.
WW 6, 7, 8. Shop Problems. Deals with shop mathematics, placing emphasis upon the use of fractions, decimals, the metric system, percentage, rate and proportion, showing their application in the solution of shop problems. Applied geometry problems developed for the shop students. Areas, volumes, speed relations, cutting speeds, thread and gear calculations, flooring, roofing, board measure, the use of the steel square, estimating and cost of materials, all find application. Three credits. Each quarter. Sec. 1, M. W. F. 9; Sec. 2, M. W. F. 1.

WW 60. Elements of Plumbing. Includes plumbing specifications, codes, layouts, installations, inspections, cutting and fitting pipe, and repairs. Two credits. Winter, Lect., T. Th. 9; Lab., Th. 10.

WW 61, 62, 63. Joinery and Millwork. The necessary basic training for students preparing to enter the woodworking trades, and also for students who wish a knowledge of woodwork for their own needs. They include a thorough study in the proper use, care and sharpening of hand tools, machine processes, safety measures, machine operation, care and repair of machines, and sharpening of machine cutters. Assigned reading and application of mathematics to woodwork problems are integral parts of the course. Problems are also assigned in the form of projects in bench work and wood turning to give practice in fundamentals of wood construction. Two, three or five credits. Each quarter. Daily 2-5.

WW 64, 65, 66. Building Construction. A study of laying out and building homes, farm buildings, garages, etc., particularly placing stress on carpenter work. Subjects include concrete forming, framing, roof framing, roofing, scaffolding, siding, exterior and interior trim, window and door work. Special attention is given to trade construction methods. Prerequisites: WW 61, and 63. Five credits. Each quarter. Daily 2-5.

WW 68. House Wiring. Designed to meet the needs of students in building construction courses. Work covers the national electrical code and, when available, the local codes in effect in Utah communities. Training in this course prepares the student to choose materials, design the circuit, and properly install a complete system for electrical heat, light, and power in a home or small public building. Three credits. Winter, T. Th. 8. Three hour lab arranged.

WW 72. Concrete and Clay Products. The composition of concrete for various purposes, the use and placement of reinforcing agents; waterproofing, coloring, and stone imitations, etc. Composition of bricks, tile, etc., and their strength and thermal conductivity are also studied. A number of projects are built in the laboratory during the course. Two credits. Winter, Lect. T. Th. 8-10. Extra lab. section to be arranged.


WW 74. Home Service Course. Upkeep and general repairs in the home such as frequently are needed on electrical, plumbing, and other home equipment. Woodwork repairs and furniture refinishing as well as fitting a window blinds and screens, calcimining and wallpaper cleaning will receive attention. Minor repairs to heating, ventilating and refrigeration equipment will also be considered. The course, designed for solving home problems and also for teaching this type of work in Junior and Senior high schools, is open to men and women students. Prerequisite, High School Physics or equivalent. Each quarter, two to five credits. Daily 9-12 or M. W. F. 9-12 T. Th. 9-12.

SCHOOL OF ENGINEERING

WW 161, 162, 163. Building Construction. Estimating and Contracting. Construction and design for homes, farm buildings and apartments, considering porch work, stairways, dormers, special roofs, insulation and other special constructions, specification writing, cost estimating, contracting methods, and drawing of special sections and details. Also a study of allowable loads. Problems in actual bidding on sets of plans are worked out by the student. Prerequisites, 9 hours Drafting and WW 61, 62, 63. Five credits each quarter. Where the laboratory requirements have already been met, only three hours will be given for the lecture in 161. Fall, Lect. M. W. F. 11. Winter and Spring Lect., M. W. F. 3; Lab., T. Th. 2-5.

Coulam

WW 170. Wood Finishing and House Decorating. Fine wood finishing such as natural finishes, French polishing, hand polishes, stains, paints, enamels, gun work, interior and exterior wood finishes, plaster paints, brick stains, stucco paints, etc. Wall papers and calcimines are also considered. The student is required to do practice work in each type of finishing. Two credits. Spring, T. Th. 9-12.

Swenson and Mortimer

WW 171, 172, 173. Cabinet Work. The design and construction of furniture and cabinets. It includes a study of the woods suitable for furniture and cabinet building, wood turning, inlaying, wood carving, and types of wood finishing. Projects are built in fine furniture and cabinets, which include inlaying, overlaying and carving. Prerequisites, WW 61, 62, and 63. Two, three or five credits. Each quarter, Daily 2-5.

Swenson and Mortimer

WW 174. Art Woodwork. The decorative means that craftsmen employ to make their products appeal to the artistic taste. The following phases will be treated by lecture and demonstration and supplementary laboratory work. Art turning, chip carving, band saw shaping, scrolling, twisted turning, slaying and overlaying. Consideration will also be given to decorative effects obtained by two-tone staining, bright colored stains and lacquers, burning, and fine polishing. Prerequisites: WW 61 and 62a. Three credits. Fall, T. Th. 9-12.

Swenson and Mortimer

III. Vocational Industrial Program

(Terminal Certificate)

E. C. JEFFSEN, Local Director; J. E. SHARP, Assistant Professor; ANTOINE B. LEMP, BERT V. ALLEN, CLYDE HURST, .........., .........., Instructors.

Cooperating with the Federal and State Departments of Education, the Industrial Division offers in the Vocational Industrial program, specialized training in ten major trades. This program offers technical training in the practices of industry with latest methods, modern equipment, and live and productive work. The instructors are men with years of successful trade experience and carry with them the full respect of their trade. Each course includes technical instruction one hour daily, shop practice in the laboratory four hours daily, and general related information one hour daily.

Close cooperation is maintained between the school and industry with problems of training and placing of students considered jointly with a trade advisory committee for each trade. Students satisfactorily completing the two-year training program are awarded a Terminal Certificate and are prepared to enter the trade as a mechanic helper or as an advanced apprentice. The Terminal Certificate may be earned in any of these curricula without having satisfied college entrance requirements, but credit thus earned cannot be applied toward the requirements for the degree. Further description of these courses will be found in the departments where they are listed.

If the lab. has been satisfied for WW 161, 3 hours credit will be allowed for the lecture.
## ACETYLENE AND ELECTRIC WELDING

**Type A Unit Day Trade**

<table>
<thead>
<tr>
<th>First Year:</th>
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<th>W</th>
<th>S</th>
<th>Second Year:</th>
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</thead>
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<td>Auto 48, 49, 50</td>
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## AIRCRAFT AND ENGINE MECHANICS

**Type A Unit Day Trade**

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## AUTO BODY AND PAINT RECONDITIONING

**Type A Unit Day Trade**

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## AUTOMOTIVE REPAIR

**Type A Unit Day Trade**

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## CARPENTRY

**Type A General Industrial**

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### COMMERCIAL PHOTOGRAPHY

**(Type B Unit Day Trade)**

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### DIESEL REPAIR

**(Type A Unit Day Trade)**

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### MACHINE SHOP PRACTICE

**(Type A General Industrial)**

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### RADIO SERVICE AND REPAIR

**(Type A Unit Day Trade)**

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### REFRIGERATION AND AIR CONDITIONING

**(Type A Unit Day Trade)**

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General Information

The fortunate geographical location of this School of Forest, Range, and Wildlife Management, the opportunity for self help for qualified men and great need for better management of the forest, range and game, provide an excellent combination of circumstances and opportunities for proper training in the management of wild lands and their resources.

Naturally-vegetated lands in Utah comprise more than 90 per cent of the total state area. The Cache National Forest, within two miles of school, the Bear River Migratory Bird Refuge within 40 miles, vast areas of range lands providing both grazing and soil conservation problems; all offer unlimited study projects and opportunities for demonstration. Herds of elk and deer come within a short distance of the campus during the winter.

The Wildlife Management department is greatly enhanced through the establishment of two research agencies of the U. S. Fish and Wildlife Service on the campus, which are housed in the forestry building. One of the ten Federal Wildlife Research Units, a cooperative project with the college, the Utah Fish and Game Department, the U. S. Fish and Wildlife Service, and the American Wildlife Institute are located here under the leadership of Dr. J. B. Low. A regional research office of the Fisheries Division is also located here. The two agencies assist to some extent in class and laboratory instruction, and aid in directing the research of graduate students. Graduate fellowships in Wildlife Management have been made available through the Wildlife Research Unit.

The comparative newness of the fields of forestry, range, wildlife, soil conservation and forest recreation, and the unquestioned need for their correlation in permanent wild land management, present excellent opportunities for those desiring to participate in these fields of public service. The purpose stressed is the handling of wild lands so that they may be of continuing benefit for present and future generations of citizens.

RECOMMENDED ENTRANCE QUALIFICATIONS

Students entering the School of Forest, Range, and Wildlife Management will find the work much easier if they have had high school algebra, chemistry, physics, typing, biology, and geometry. If the student, for example, has not had high school algebra, he will be required to make up that deficiency in college. It is, therefore, recommended that these basic mathematics and science courses be taken in high school.

COURSES OF STUDY

The curriculum of this school is designed to train men for private, federal government or state work in (1) Forest Management, (2) Range Management, and (3) Wildlife Management. The Range majors may choose, in the senior year, to specialize either in Range Management or Soil Conservation.

FIVE-YEAR COURSE RECOMMENDED

The efficient management of wild land resources in all its phases requires a broad fundamental knowledge of many of the sciences and arts. For this reason, many of the forest schools throughout the nation have recognized that the usual four-year program of study is inadequate to give the student sufficient training in both the basic sciences and in the technical subjects of the chosen field. It is therefore recommended that a five-year course of study be pursued.

The first two years of the regular four-year course of study are practically the same in all departments, with specialization in a major field beginning in the third or junior year. This program gives the student only a minimum of basic training and cultural foundation. The five-year program would provide
for an additional year devoted principally to general training in the arts and sciences. This would furnish a better foundation for the technical studies of the last two years and a superior cultural background which is so necessary for advancement in public service fields.

SUMMER CAMP

The School of Forest, Range, and Wildlife Management has purchased and leased 3,000 acres of forest and range land approximately 25 miles from the campus within the Cache National Forest, where summer camp facilities have been established. Field instruction is required for graduation in addition to the regular 12 quarters of course work. Also, at least one season of field experience with a recognized conservation agency is expected of all students.

Field instruction courses in Forestry, Range and Wildlife given at summer camp, include: Forestry 90, Forestry 96, Forestry 97, Range 98, Wildlife 99, for a total of 16 credits. Attendance at this camp is required between the sophomore and junior years and is prerequisite to the technical courses of the junior and senior years. The summer camp opens on the second Monday, following the close of the spring quarter and continues for a period of eleven weeks. Sixteen credits are allowed for the complete course. A charge of $27 is made for tuition, a laboratory fee of $8.00 is charged for each of the five courses required and board is provided on a cost basis. All junior college students planning on entering this school at the beginning of their junior year, should make arrangements to attend the camp during the summer following their graduation from the junior college.

FIELD TRIPS

A schedule of field trips is planned each year as a part of the regular class instruction. Courses requiring attendance on field trips are so designated under course descriptions. Charges for transportation are levied at the rate of one cent per mile. The total expense on this account varies between $1 and $5 during any one quarter.

In addition to the trips scheduled for the individual courses, each major department conducts an extensive field trip in the spring quarter, covering all available branches of the major field. This trip is required of all seniors prior to graduation. The trip for wildlife majors is usually scheduled over the first week of May, and Range majors over the second week. The trip for Forestry majors is more extensive and covers a period of ten days or two weeks just prior to the end of the spring quarter.

SCHOLARSHIP

A high standard of scholarship must be maintained by the student interested in Forestry or the associated fields because of the technical nature of the work and the high professional standards and the character of the Civil Service examinations that are required for federal service.

MINORS

Students other than Forest, Range and Wildlife Management School majors may complete a minor in any of the three departments of the School upon completion of 18 credit hours approved by the head of the department concerned.

GENERAL REQUIREMENTS

The following general requirements must be met by all students graduating from the School of Forest, Range and Wildlife Management.

A. One full term of summer camp.
B. At least 192 hours (quarter hours) exclusive of summer camp, basic military science, and physical education.
C. All courses prescribed under the study program of the chosen major.
D. All of the following general requirements:
1. English and Speech, 16 hrs., of which at least 3 must be Speech.
2. Social Science—8 hrs.
3. Military Science or Physical Education—6 quarters.¹

**BASIC COURSES**

Required of all students majoring in the School of Forest, Range and Wildlife Management.

<table>
<thead>
<tr>
<th>Course</th>
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<th>Sophomore</th>
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<td>Math. 34*, 35, 46</td>
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<td>Forestry 1</td>
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<tr>
<td>Mil. Sci.</td>
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</table>

**Forest Management**

LEWIS M. TURNER, J. W. FLOYD, T. W. DANIEL, Professors; D. W. BENSEND, Associate Professor;—Assistant Professor.

Upon completion of the curriculum prescribed below, students are granted the degree of Bachelor of Science, major in Forest Management. Within the near future the degree of Master of Science in Forest Management will be granted upon completion of an arranged course of study.

This course is designed to give the student a comprehensive background of all branches of forestry, including growing, protecting, harvesting, and utilizing of timber crops. Related uses of forest land for grazing, wildlife, and recreation are also presented to train the student properly in multiple use land management.

Electives: It is recommended that Engineering 60 be taken in the winter or spring quarter of the Freshman year. Electives necessary to fill out the program of the Sophomore year should be chosen with the object of improving the students' cultural as well as professional background. History 17, Radio 58, and Forestry 95 are recommended. In the Junior and Senior years electives should be chosen with the object of broadening a specific field of study. Forestry 116 and 125 are recommended. Courses selected must meet the approval of the major professor.

**STUDY PROGRAM**

Freshman and Sophomore Years—See Basic Courses.

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<tr>
<td>Forest Measurements I, II</td>
<td>For.</td>
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<tr>
<td>Dendrology</td>
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<td>Silviculture I, II</td>
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<td>Plant Ecology</td>
<td>Range</td>
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<td>Animal Husbandry</td>
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¹Not required of ex-military service personnel.
²Students presenting 1½ units of High School Algebra are not required to take Math. 34.
³Students in Wildlife Management may elect Zoo. 3 in place of Agron. 6 in the Fall quarter and elect Zoo. 4 in the Winter quarter. Agron. 6 may be taken in the Fall quarter of the Senior year.
FOREST, RANGE, AND WILDLIFE MANAGEMENT 211

Senior

<table>
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<tr>
<th>Course</th>
<th>Dept.</th>
<th>Number</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood Technology</td>
<td>For.</td>
<td>126</td>
<td>F</td>
</tr>
<tr>
<td>Forest Management</td>
<td>For.</td>
<td>121</td>
<td>W</td>
</tr>
<tr>
<td>Improvements and Recreation</td>
<td>For.</td>
<td>142</td>
<td>S</td>
</tr>
<tr>
<td>Seminars I, II, III</td>
<td>For.</td>
<td>122</td>
<td>F</td>
</tr>
<tr>
<td>Public Land Administration</td>
<td>For.</td>
<td>132</td>
<td>W</td>
</tr>
<tr>
<td>Forest Policy and Economics</td>
<td>For.</td>
<td>133</td>
<td>S</td>
</tr>
<tr>
<td>Forest Finance</td>
<td>For.</td>
<td>122</td>
<td>W</td>
</tr>
<tr>
<td>Milling and Products</td>
<td>For.</td>
<td>130</td>
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<tr>
<td>Forest Entomology</td>
<td>Zoo.</td>
<td>105</td>
<td>F</td>
</tr>
<tr>
<td>Range Management</td>
<td>Range</td>
<td>162</td>
<td>S</td>
</tr>
<tr>
<td>Range Seminar</td>
<td>Range</td>
<td>192</td>
<td>F</td>
</tr>
<tr>
<td>Vegetation Influences</td>
<td>Range</td>
<td>182</td>
<td>S</td>
</tr>
<tr>
<td>Economic Wildlife</td>
<td>Wildlife</td>
<td>155</td>
<td>S</td>
</tr>
<tr>
<td>Technical Writing</td>
<td>English</td>
<td>111</td>
<td>S</td>
</tr>
</tbody>
</table>

1. General Forestry. A general survey of the profession of forestry, range management, soil conservation, and wildlife management; character of the work; and relation of multiple uses of wild land to the welfare of the state and the nation. Three credits. Fall, M. W. F. 10. 

10. Forest and Range Conservation. An introduction to conservation problems designed to acquaint students with the nature and extent of the organic resources of the United States and methods of conserving them. Forest, soil conservation, range management and wildlife aspects are considered. Not open School of Forestry majors. Three credits. Winter, M. W. F. 9. 

41. Utah Trees. Characteristics and importance of the native and introduced conifers and broad-leaved trees of Utah. Not open to majors in the School of Forestry. Two lectures, one lab. Three credits. Spring, time arranged. 

90. Forest Improvements. Practical field problems in trail and telephone construction, the use of field radios, methods of fire prevention, detection and suppression. Care and use of woods tools. Care and use of horses in Forest, Range, and Wildlife work. Problems in building construction, planning recreational areas and water development. Two weeks. Three credits. Summer Camp. 

95. Winter Woodcraft. Lectures and field trips are designed to train the student in the proper way of living in the wilderness. Proper clothing, camping accessories, tents and emergency shelters, food lists and emergency foods, fires, nature lore, snow characteristics and weather signs are the principal topics studied. The student will use skis and snowshoes. Prerequisite: ability to ski. The student must furnish ski boots and suitable outdoor clothing. Two credits. Winter. Lecture, F. 12; Field trips, S. 8-12. $2 fee. 

96. Forest Surveying. Practical field problems in surveying methods commonly employed in Forest, Range, and Wildlife Management. Type mapping. Special problems for majors in each of the three fields. Three weeks. Four credits. Summer Camp. 


101. Forest Survey I. Identification and range of the major commercial species of the United States. Elementary principles of silviculture and forest management. Not open to students in Forest Management. Three credits. Fall. T. Th. 8; Lab., Th. 2-5. 

102. Forest Survey II. Forest improvement and recreation; log scaling, timber cruising, study of growth and yield; logging, milling, and seasoning of
lumber. Some attention will also be given to identification, properties and uses of the major commercial woods of the United States and to the major wood products. Not open to students in Forest Management. Three credits. Winter, T. Th. 8; Lab., Th. 2-5.


112. Dendrology. Identification and distribution of the more important forest trees of the United States. Three credits. Fall, M. W. 10; Lab., W. F. 2-5.


115. Silviculture II. Silvicultural systems used in securing natural reproduction of forests and their applications to the important species and forest types in the United States. Prerequisite, For. 114. Three credits. Spring, T. Th. 10; Lab., W. 2-5.

116. Seeding and Planting. Seed collection, extraction and cleaning methods; germination testing; storage of forest tree seeds. Practical experience in field planting and nursery work. Two credits. Spring, T. 8; Lab., S. 8-12.


122. Forest Finance. Financial aspects of forest management, such as land, growing stock and stumpage valuation, forest taxation, and damage appraisal. Prerequisite, For. 121. Four credits. Winter, M. W. F. 10; Lab., W. 2-5.

125. Logging. Methods of handling timber from tree to mill in the various forest regions. Three credits. Field trips arranged. Spring, M. W. F. 11.


137. Improvements and Recreation. Roads, trails and structures necessary in forest management. Recreational use of forests and the classifications and development of areas suitable for this purpose. Four credits. Spring, M. W. Floyd

142, 143, 144. Forestry Seminar. Review and discussion of current forestry problems and practices. Lectures and labs. One credit each quarter. Fall, Winter, and Spring. Time arranged. Staff

145. Forest Problems. Individual study and research upon a selected forestry problem approved by the instructor. One to three credits. Any quarter. Time arranged. Staff

201, 202, 203. Advanced Forestry Seminar. Review and discussion of more advanced current literature. For students following a five-year program. Two credits each quarter. Fall, Winter, and Spring. Time arranged. Turner

Range Management

L. A. STODDART, Professor; A. D. SMITH*, C. WAYNE COOK, Assistant Professors.

Upon completion of the course prescribed below, students are granted the degree of Bachelor of Science, major in range management.

The course in range management acquaints the student with methods of maintaining the production of native lands and methods of managing range livestock. An opportunity is given to take special instruction in soil conservation with the election of certain courses during the senior year. Studies in soil conservation acquaint the student with problems of soil erosion and methods of conserving water and managing lands, especially lands under native vegetation; in such a manner that productivity will be maintained.

The degree of Master of Science in range management will be granted upon completion of an arranged course of study. A period of one to two years and a total of forty-five residence credits, at least ten being individual research, are required. Students desiring this advanced work should obtain permission from the major professor at least twelve months before the degree is to be granted, at which time a program of research and study will be outlined. The choice of the research problem and of the specialization of study rests largely with the student. Adequate facilities are available to allow emphasis upon soil conservation, animal husbandry, botany, wildlife, economics, or agronomy. A bachelor's degree in range management or a related subject is a prerequisite for graduate work in this field.

Two graduate assistantships are granted annually. One, a research assistantship, is granted by the Utah Experiment Station and pays $600 for a 12-month period. The second is a teaching assistantship, paying $400 for a 10-month period.

Graduation Requirements

The degree of Bachelor of Science in range management will be granted upon completion of the following:

1. The freshman and sophomore programs as prescribed for the School of Forestry. (See introduction to School of Forestry.)

2. Ten hours of animal husbandry exclusive of poultry courses for students majoring in range management as specified below.

3. The junior study program and one of the two senior programs listed below.

*On leave.
## STUDY PROGRAM

### Junior

<table>
<thead>
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<th>Course</th>
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<th>Credit</th>
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</thead>
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<td>Ag. Ec.</td>
<td>106</td>
<td>5</td>
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<tr>
<td>Agrostology</td>
<td>Botany</td>
<td>108</td>
<td>4</td>
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<tr>
<td>Plant Ecology</td>
<td>Range</td>
<td>126</td>
<td>5</td>
</tr>
<tr>
<td>Plant Physiology</td>
<td>Botany</td>
<td>120</td>
<td>5</td>
</tr>
<tr>
<td>Range Management</td>
<td>Range</td>
<td>162</td>
<td>5</td>
</tr>
<tr>
<td>General Wildlife Management</td>
<td>Wildlife</td>
<td>150</td>
<td>5</td>
</tr>
<tr>
<td>Forbs and Browse, Poisonous Plants</td>
<td>Range</td>
<td>177</td>
<td>2</td>
</tr>
<tr>
<td>Public Land Administration</td>
<td>For.</td>
<td>132</td>
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<tr>
<td>Fire Protection</td>
<td>For.</td>
<td>118</td>
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### Senior—Range Management

<table>
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<td>Wildlife</td>
<td>155</td>
<td>3</td>
</tr>
<tr>
<td>Advanced Range</td>
<td>Range</td>
<td>164</td>
<td>3</td>
</tr>
<tr>
<td>Range Economics</td>
<td>Range</td>
<td>181</td>
<td></td>
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<tr>
<td>Forage Crops</td>
<td>Agron.</td>
<td>103</td>
<td>4</td>
</tr>
<tr>
<td>Technical Writing</td>
<td>English</td>
<td>111</td>
<td>4</td>
</tr>
<tr>
<td>Seminar</td>
<td>Range</td>
<td>192, 193, 194</td>
<td>1 1 1</td>
</tr>
<tr>
<td>Forest Survey</td>
<td>For.</td>
<td>101</td>
<td>3</td>
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</table>

### Senior—Soil Conservation

<table>
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<td>Agron.</td>
<td>108</td>
<td>3</td>
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<tr>
<td>Engineering aspects of soil and water conservation</td>
<td>A. E.</td>
<td>108</td>
<td>3</td>
</tr>
<tr>
<td>Soil Conservation</td>
<td>Range</td>
<td>167</td>
<td>4</td>
</tr>
<tr>
<td>Vegetation Influences</td>
<td>Range</td>
<td>182</td>
<td>3</td>
</tr>
<tr>
<td>Forage Crops</td>
<td>Agron.</td>
<td>103</td>
<td>4</td>
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<tr>
<td>Soil Technology</td>
<td>Agron.</td>
<td>121</td>
<td>4</td>
</tr>
<tr>
<td>Advanced Physical Geology</td>
<td>Geol.</td>
<td>115</td>
<td>5</td>
</tr>
<tr>
<td>Hydrology and Meteorology</td>
<td>C. E.</td>
<td>143</td>
<td>4</td>
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<td>Technical Writing</td>
<td>English</td>
<td>111</td>
<td>4</td>
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<tr>
<td>Seminar</td>
<td>Range</td>
<td>192, 193, 194</td>
<td>1 1 1</td>
</tr>
</tbody>
</table>

### Minor—Range Management

The following courses are suggested for students wishing to minor in range management. These requirements are subject to change upon approval of the department head.

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Range 126</td>
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<tr>
<td>Range 160</td>
<td>5 hours</td>
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<tr>
<td>Range 176</td>
<td>3 hours</td>
</tr>
<tr>
<td>Range 181</td>
<td>3 hours</td>
</tr>
<tr>
<td>Range 192, 193, 194</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

98. Range Practice. Field work in range management involving training in making range reconnaissance, estimating utilization, and conducting technical range research. In addition time will be devoted to range improvement and management planning. Twelve days at forestry summer camp. Three credits.

Staff
126. Plant Ecology. An analysis of habitat factors as they influence plant growth and distribution. Attention will be given to plant succession and competition and to detailed methods of studying and mapping vegetation. Prerequisite, Botany 30. Five credits. Fall and Spring. M. T. Th. 11; Lab., M. 2-5; Field trips arranged.

160. Principles of Managing Range Lands. A general course designed to give students not majoring in the field a knowledge of how to evaluate, increase and perpetuate range. Attention is given to various grazing systems, livestock handling practices, and to the physiological effects of grazing upon plant life. Range maintenance and revegetation problems of various western range areas will be discussed, and students become acquainted with the important native forage plants and poisonous plants of each. Field trips and laboratory work on range plants. Prerequisite, Botany 22 or Botany 12. Three lectures, two labs. Five credits. Fall and Spring, T. Th. 11; T. Th. 2-5. One lecture arranged.

162. Range Management. A technical course dealing with problems met in managing native range lands, including a study of grazing regions and the problems of each; revegetation of range lands; maintenance of production; utilization of range forage; and range livestock management as it affects range vegetation. Five credits. Field trips arranged. Prerequisite, Botany 30. Fall, M. T. W. F. 10; Lab., Th. 2-5.

164. Advanced Range. Technical problems in field methods, grazing reconnaissance, management plans, range planting, range administration, and systems of grazing for range improvement. Especially designed to train men in range research and technical problems of administration. Prerequisites, Range 162 and Range 126. Three credits. Winter, M. W. F. 9.

167. Soil Conservation. Designed to give the student a broad background of the field of soil and water conservation with special reference to range and forest land. It includes history of, causes of, and methods of controlling erosion. Should be preceded or accompanied by Argonomy 6 and Range 126. Four credits. M. W. F. 10; Lab., S. 9-12. Field trips arranged.

176. Range Forage Plants. Native forage plants, including poisonous plants, their identification, distribution, ecology, and economic value. Not open to range management majors. Prerequisite, Botany 30. Four credits. Winter, M. W. 1; Lab., M. W. 2-5.

177. Forbs and Browse. A study of important non-grasseous forage plants, including identification, region of growth, habitat, and forage value. Prerequisite, Botany 30. Two credits. Fall, W. 1; Lab., W. 2-5.

179. Poisonous Plants. A study of important poisonous plants, including general methods of livestock handling and range management practices to avoid losses from poisonous plants. Included are identification, region of growth, habitat, poisoning symptoms, remedies, and control measures. Prerequisite, Botany 30. One lecture, one lab. Two credits. Spring, W. 1; Lab., W. 2-5.

181. Range Economics. Development of the range industry, cost of production, range land utilization, organization of cattle and sheep industry, and value of range forage. Prerequisite, Range 162. Three credits. Fall, M. T. Th. 12.

182, 282. Vegetation Influences. A course in which the influences of vegetation on the hydrological cycle are studied. Emphasis will be given influences of vegetation on percolation of ground waters, runoff, soil erosion and the regimen of streams. Graduate credit available with additional assignment. Three credits. Winter, M. T. Th. 12.

192, 193, 194. Range Seminar. Current range management research and problems, including a systematic review of the field of range management and related fields. This includes annual three-day range trip. Prerequisite, Range 162. One credit each quarter. Fall, T. Th. 9; Winter, T. Th. 10; Spring T. Th. 10.
195. Range Problems. Individual study and research upon a selected range problem approved by the instructor. Open to range management majors or to others by approval of instructor. One to three credits. Time arranged. Staff

200. Thesis. Original research and study on a problem in range management or soil conservation, must be followed by the preparation of a formal thesis. This course is open only to graduate students upon approval of the major professor. One to 15 credits. Any quarter, time arranged. Staff

205. Graduate Seminar. Current scientific papers in range management, soil conservation, and related subjects, and an analysis of range problems in foreign countries. Not open to undergraduate students. One credit. Fall and Winter, time arranged. Staff

206. Research Methods. A study of research methods in range management and related subjects. A review of scientific literature in the field and an analysis of results. Open to undergraduate students only upon approval. Two credits. Winter, T. Th. 9.


Wildlife Management

G. H. Kelker, Associate Professor; J. B. Low, Associate Professor and Biologist, U. S. Fish and Wildlife Service; .........., Assistant Professor.

Upon completion of the basic courses and the upper division requirements as outlined in the study program, students are granted the degree of Bachelor of Science major in Wildlife Management. The basic courses of the freshman and sophomore years are tabulated on page 194. Prospective Wildlife Management majors should elect Zoology 3 and 4 in the sophomore year.

All juniors and seniors are expected to go on the annual five day spring field trip. The cost approximates thirty dollars.

Through the cooperation of the Fish and Wildlife Service of the U. S. Department of Interior, the Utah State Fish and Game Department, the American Wildlife Institute, and the College, one of the ten federally sponsored Wildlife Research Units was established at Utah State College in 1935.

Through the establishment of this Wildlife Research Unit, funds are available for two to four graduate research fellowships paying $500 to $720 per year for students engaged in work in this field. Candidates for fellowships will be chosen from applicants who have a bachelor's degree in Biology, Forestry, or Agriculture from a college of recognized standing, and who submit formal application with transcript of college credits and references on or before May 1.

STUDY PROGRAM

Freshman and Sophomore Years—See Basic Courses, Forest, Range, and Wildlife Management, page 194.

<table>
<thead>
<tr>
<th>Course</th>
<th>Dept.</th>
<th>Number</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entomology, Mammalogy, Ornithology</td>
<td>Zoo.</td>
<td>13 122 121</td>
<td>5 4 4 4</td>
</tr>
<tr>
<td>Ichthyology</td>
<td>Zoo.</td>
<td>155</td>
<td>3 3</td>
</tr>
<tr>
<td>Principles of Wildlife Management</td>
<td>Wildlife</td>
<td>145</td>
<td>3 5</td>
</tr>
<tr>
<td>Management of Game Birds</td>
<td>Wildlife</td>
<td>154</td>
<td>3 5</td>
</tr>
<tr>
<td>Plant Ecology</td>
<td>Range</td>
<td>126</td>
<td>5 4</td>
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<tr>
<td>Range Forage Plants</td>
<td>Range</td>
<td>176</td>
<td>5 4</td>
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<tr>
<td>Soils</td>
<td>Agron.</td>
<td>6</td>
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<td>Problems</td>
<td>Wildlife</td>
<td>170</td>
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Wildlife Management Program Office
### Senior Courses

<table>
<thead>
<tr>
<th>Course</th>
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<th>Number</th>
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<tbody>
<tr>
<td>Forest Survey</td>
<td>For.</td>
<td>101</td>
<td>102</td>
</tr>
<tr>
<td>Range Management</td>
<td>Range</td>
<td>182</td>
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</tr>
<tr>
<td>Animal Ecology</td>
<td>Wildlife</td>
<td>160</td>
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<tr>
<td>Limnology</td>
<td>Wildlife</td>
<td>161</td>
<td></td>
</tr>
<tr>
<td>Marsh Management</td>
<td>Wildlife</td>
<td>163</td>
<td></td>
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<tr>
<td>Management of Big Game</td>
<td>Wildlife</td>
<td>153</td>
<td></td>
</tr>
<tr>
<td>Fish Culture</td>
<td>Wildlife</td>
<td>165</td>
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</tr>
<tr>
<td>Seminar</td>
<td>Wildlife</td>
<td>157</td>
<td>158</td>
</tr>
<tr>
<td>Problems</td>
<td>Wildlife</td>
<td>170</td>
<td></td>
</tr>
<tr>
<td>Technical Writing</td>
<td>English</td>
<td>111</td>
<td></td>
</tr>
</tbody>
</table>

99. Wildlife Practice. Lake and stream surveys and mapping for improvement purposes and for restocking; the use of census methods for big game, game birds, and rodents; cover mapping; preparation of animal skins; and study of deer and elk ranges. Twelve days. Three credits. Summer camp.  

Kelker


Kelker


Kelker

153, 253. Management of Big Game. Life histories, distribution, numerical variation, enemies, and plans for management of native big game animals. Prerequisite, Wildlife 145. Three lectures, one laboratory period, and field trips on Saturday. Assessment $2.00. A term paper required of those doing graduate work. Five credits. Field trip assessment, $2.00.  

Kelker


Kelker

155. Economic Wildlife. General importance of the wildlife resource; natural history, economic values and control methods for rodents and predators; identification of skulls and skins; with a brief evaluation of hawks and reptiles. The course is particularly adapted for students in forestry, range, and agriculture. Three credits. Winter, W. F. 8; F. 2-5.  

157, 158, 159. Wildlife Seminar. Discussion of current developments in Wildlife management. One quarter is given to comprehensive testing of subject matter. One credit each quarter. Fall, T. Th. 9; Winter, T. Th. 11; Spring, T. Th. 9.  

Staff


163. Marsh Management. Marshland restoration and maintenance for waterfowl and aquatic furbearers; economic returns from marshlands; ecological plant succession and methods of restoration and maintenance of plant food
and cover; management of public and private waterfowl shooting grounds; evaluation and control of predation and sickness; water level manipulation and controls for year-round operations of marshlands. Lectures, laboratory, and field trips. Field trip assessment, $4.00. Prerequisite, Wildlife 154. Three credits. Spring, M. W. 9; W. 2-5.

165, 265. Fish Culture. Principles of lake and stream improvement; food habits of game fishes, propagation methods, and common fish diseases. Prerequisite, Zoo. 155, Zoo. 138. Two credits. Spring, F. 9; Th. 2-5.

169. Field and Laboratory Technic. Study of the scientific method; training in field observation and note taking; data analysis, hair, feather, bone, and seed identification. Field trips $1.00. Three credits. Winter, M. 8; Lab., T. Th. 2-5.

170. Wildlife Problems. Individual study and research upon a selected wildlife problem approved by the instructor. One to three credits. Any quarter. Time arranged.


270. Wildlife Thesis. (Graduate students.) Individual research is assigned to qualified students in problems of Wildlife Management. Five to ten credits per quarter. Any quarter. Time arranged.
SCHOOL OF HOME ECONOMICS
ETHELYN O. GREAVES, Dean.

Curricula in Home Economics ........................................ 220
Child Development and Parent Education ........................... 228
Clothing, Textiles and Related Arts ................................. 229
Foods and Nutrition .................................................. 231
  Dietetics ............................................................. 231
  Institutional Management ........................................... 231
Household Administration .............................................. 233
Home Economics Education ............................................. 234
Two-Year Terminal Course .............................................. 233
Curricula in Home Economics

CHILD DEVELOPMENT AND PARENT EDUCATION

Freshman Year

<table>
<thead>
<tr>
<th>Subject</th>
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<tr>
<td>Home Economics</td>
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<tr>
<td>C. T. &amp; R. A. 9 (1)</td>
<td>3</td>
<td>F W S</td>
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<tr>
<td>H. E. 10 (1)</td>
<td>1</td>
<td>F W S</td>
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<tr>
<td>F. &amp; N. 5 (1)</td>
<td>3</td>
<td>F W S</td>
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<tr>
<td>F. &amp; N. 9 (1)</td>
<td>3</td>
<td>F W S</td>
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<tr>
<td>C. D. 70</td>
<td>3</td>
<td>F W S</td>
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<tr>
<td>Group Requirements (2) (3) (P. 44)</td>
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<tr>
<td>Other College Requirements</td>
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<td>F W S</td>
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<tr>
<td>Electives (4)</td>
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Sophomore Year

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<td>C. D. 60</td>
<td>5</td>
<td>F W S</td>
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<td>H. Ad. 65 (1)</td>
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<td>F W S</td>
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<td>F. &amp; N. 35</td>
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<td>F W S</td>
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<tr>
<td>C. T. &amp; R. A. 55</td>
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<td>F W S</td>
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<td>Eng. 10</td>
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Junior Year

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<tr>
<th>Subject</th>
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<th>Quarter</th>
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<tr>
<td>Other College Requirements</td>
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<tr>
<td>Eng. 110</td>
<td>3</td>
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<tr>
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<td>Psych. 110</td>
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<td>F W S</td>
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<tr>
<td>Psy. 112</td>
<td>3</td>
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<td>P. E. 182</td>
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<td>Music 130</td>
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<td>16 or 17</td>
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</table>

(1) Suggested for the required 15 credits of general Home Economics.

(2) Prerequisites: Art 1, 2; Music 4, 5; Psychology 3.

(3) Group requirement recommendation: Physiology 4; Bacteriology 1; Physics 1; Sociology 70; Geology 1.

(4) Elective recommendations: Speech 18; Child Development 176; Woodwork 74; Sociology 160.

*Alternate years.
### Senior Year

<table>
<thead>
<tr>
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<td>C. D. 175</td>
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<td>C. D. 190</td>
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**Certification Requirements (Page 135)**

| Art. 162                     | 3      | W       |
| Ed. 104                      | 3      | F W S   |
| Ed. 105                      | 3      | F W S   |
| Ed. 106                      | 10     | F W S   |
| Electives (4)                | 14 or 15 | F W S |

**Total Credits:** 47 or 50

(1) Suggested for required 15 credits of general Home Economics.

(4) Elective recommendations: Speech 18; Child Development 176; Woodwork 74; Sociology 160.

### CLOTHING, TEXTILES AND RELATED ARTS

#### Freshman Year

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<td>C. T. &amp; R. A. 24</td>
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**Total Credits:** 51

Movemented for required 15 credits of general Home Economics.

(2) Group requirement recommendations: Physiology 4; Bacteriology 1, 2; Psychology 3; Economics 51; Chemistry 10, 11, 12; Sociology 70; Speech.

(3) Elective recommendations: Clothing, Textiles and Related Art 33; History 4; Consumer Education 50; Household Administration 66; Physics 1; Landscape Architecture 3; Economics 145.

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*Alternate years.*
### Junior Year

<table>
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<tr>
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<th>Credit</th>
<th>Quarter</th>
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<td>C. T. &amp; R. A. 115</td>
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<td>C. T. &amp; R. A. 140</td>
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<td>C. T. &amp; R. A. 170</td>
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**Senior Year**

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<td>C. T. &amp; R. A. 200</td>
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<td>C. T. &amp; R. A. 185</td>
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<td>C. T. &amp; R. A. 175</td>
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<td>Electives (3)</td>
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(3) Elective recommendations: Clothing, Textiles and Related Art 33, 175; History 4; Physics 1; Landscape Architecture 3; Economics 145.

**FOODS AND NUTRITION**

(Including A. D. A. Requirements for Student Dietitian Training)

### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
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<td>30</td>
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**Sophomore Year**

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<td>F. &amp; N. 20</td>
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<td>Chem. 10, 11, 12</td>
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(1) Suggested for required 15 credits of general Home Economics.

(2) Prerequisite: Psychology 3.

(3) Group requirement recommendations: Physiology 4; Bacteriology 1, 2; Speech 1; Economics 5; Sociology 70.

*This program may be adjusted to meet the needs of students preparing for research, journalism or for the teaching profession.*
(4) Elective recommendations: Mathematics 34 or 35; C. T. & R. A. 25; Child Development 70; Agricultural Economics 62; Speech 81; Physics 1; Typewriting; Journalism 12, 112, 113, 114; Education 121, 122b; Bacteriology 120; Physiology 145, 150; Foods and Nutrition 144, 160; Household Administration 150.

Junior Year

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<tr>
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<tr>
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<tr>
<td>F. &amp; N. 107</td>
<td>3</td>
<td>S†</td>
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<td>H. Ad. 149 (1)</td>
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<tr>
<td>Chemistry</td>
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<td>Bact. &amp; Biochem. 111</td>
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48

Senior Year

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<tbody>
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<td>F. &amp; N. 145</td>
<td>4</td>
<td>F W</td>
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<tr>
<td>F. &amp; N. 146</td>
<td>3</td>
<td>F -</td>
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<td>F. &amp; N. 180</td>
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<td>F - S</td>
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<td>F. &amp; N. 191</td>
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<td>F. &amp; N. 182</td>
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<td>F. &amp; N. 183</td>
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48

(1) Suggested for required 15 credits of general Home Economics.

(4) Elective recommendations: Mathematics 34 or 35; C. T. & R. A. 25; Child Development 70; Agricultural Economics 62; Speech 81; Physics 1; Typewriting; Journalism 12, 112, 113, 114; Education 121, 122b; Bacteriology 120; Physiology 145, 150; Foods and Nutrition 144, 160; Household Administration 150.

HOUSEHOLD ADMINISTRATION

Freshman Year

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<tr>
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<td>F. &amp; N. 5</td>
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<td>F. &amp; N. 9</td>
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48

*Given in 1946-47.*
Sophomore Year

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<td>C. D. 60</td>
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<td>Econ. 51</td>
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Other College Requirements

| Eng. 10       | 5      | F W S   |
| Physical Education | 3      | F W S   |
| Electives (2)  | 5      | F W S   |

Credit: 48

(1) Group requirement recommendations: Physiology 4; Psychology 3; Sociology 70; Speech 1; History 4; Political Science 1; Art 1, 2; Misc 1, 80, 81.

(2) Elective recommendations: Landscape Architecture 3; Zoology 111; Sociology 160; Art 114; Foods and Nutrition 35; English 24; Music 38; Journalism 15; Economics 145; Household Administration 50.

Junior Year

<table>
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<td>F W S</td>
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<td>C. D. 70</td>
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Credit: 48

Senior Year

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<td>Electives (2)</td>
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</table>

Credit: 48

(2) Elective recommendations: Landscape Architecture 3; Zoology 111; Sociology 160; Art 114; Foods and Nutrition 35; English 24; Music 38; Journalism 15; Economics 145; Household Administration 50.

HOME ECONOMICS EDUCATION

The following professional program prepares graduates for teaching in the field of home and family living. It certifies graduates to teach any and all phases of home economics in the schools of Utah including high schools having George Dean programs (vocational homemaking).

It is important that students register with the instructor for Education 121 and 122 two quarters before they plan to do their student teaching. This provides the time necessary to obtain the cooperation of schools to provide enough student teaching assignments for those registering in these courses.

*Alternate years. Given in 1946-47.
### Freshman Year

<table>
<thead>
<tr>
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<th>Credit</th>
<th>Quarter</th>
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<tbody>
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<td>C. T. &amp; R. A. 9</td>
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<tr>
<td>Electives (3)</td>
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| Total                           | 48     |         |

(1) Prerequisites: Art 1, 2; Chemistry 10, 11, 12; Psychology 3.

(2) Group requirement recommendations: Bacteriology 1 and 2; Economics 51 or Agricultural Economics 62; English 24; Music 1; Physiology 4; Speech 1; History, Literature, Political Science, Sociology.

(3) Elective recommendations: Students are advised to consider:

a. Developing a field of interest into a teaching minor i.e., Art; Commerce; English; Music; Physical Education; Social Science; Child Development; Clothing, Textiles and Related Art; Foods and Nutrition.

b. Developing understanding of cultural, social, and economic problems through Art; Economics; Music; History; Political Science; Sociology.

### Sophomore Year

<table>
<thead>
<tr>
<th>Home Economics</th>
<th>Credit</th>
<th>Quarter</th>
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<tbody>
<tr>
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<td>C. T. &amp; R. A. 24</td>
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<td>C. T. &amp; R. A. 25</td>
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<td>F. &amp; N. 21</td>
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<td>Other College Requirements</td>
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| Total                           | 48     |         |

### Junior Year

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<td>H. Ad. 149</td>
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<td>F W -</td>
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<td>Soc. 160</td>
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<td>Other College Requirements</td>
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<tr>
<td>Eng. 110</td>
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</tr>
<tr>
<td>Education</td>
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<tr>
<td>Ed. 114</td>
<td>3</td>
<td>F W -</td>
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<tr>
<td>Ed. 120</td>
<td>3</td>
<td>F - S</td>
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<tr>
<td>Phys. 114</td>
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<td>Psy. 102a and b</td>
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<tr>
<td>Electives (3)</td>
<td>18</td>
<td>F W S</td>
</tr>
</tbody>
</table>

| Total                           | 48     |         |
(1) Prerequisites: Art 1, 2; Chemistry 10, 11, 12; Psychology 3.

(2) Group requirement recommendations: Bacteriology 1 and 2; Economics 51 or Agricultural Economics 62; English 24; Music 1; Physiology 4; Speech 1; History, Literature, Political Science, Sociology.

(3) Elective recommendations: Students are advised to consider:
   a. Developing a field of interest into a teaching minor, i.e. Art Commerce; English; Music; Physical Education; Social Science; Child Development; Clothing, Textiles and Related Art; Foods and Nutrition.

   b. Developing understanding of cultural, social, and economic problems through Art, Economics, Music, History, Political Science, Sociology.

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### Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Home Economics</td>
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<tr>
<td>C. T. &amp; R.A. 185</td>
<td>3</td>
<td>F — S</td>
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<tr>
<td>F. &amp; N. 142</td>
<td>4</td>
<td>F — S</td>
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<tr>
<td>H. Ad 150</td>
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<td>Electives</td>
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<tr>
<td>Education</td>
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<tr>
<td>Ed. 112</td>
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<tr>
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<td>Ed. 122</td>
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<td>Ed. 145</td>
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<td>— W S</td>
</tr>
<tr>
<td>Electives (3)</td>
<td>10</td>
<td>F W S</td>
</tr>
</tbody>
</table>

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(3) Elective recommendation: Students are advised to consider:

   a. Developing a field of interest into a teaching minor, i.e. Art Commerce; English; Music; Physical Education; Social Science; Child Development; Clothing, Textiles and Related Art; Foods and Nutrition.

   b. Developing understanding of cultural, social, and economic problems through Art, Economics, Music, History, Political Science, Sociology.

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### General Information

All Home Economics courses are intended primarily to prepare young women for the fundamentally important function of homemaking.

Admission to the School of Home Economics requires completion of 15 high school units of work including the following:

- **English** .......................... Three Units
- **Algebra** .......................... One Unit
- **Social Science** .................. One Unit
- **Natural Science (requiring laboratory work)** .......................... One Unit
- **Elected (from the above groups and Modern Languages)** .......................... Three Units

The function of homemaking is many-sided, and it may extend beyond the immediate environment of home. For this reason courses are planned to prepare young women to carry the knowledge and skills of expert homemaking.
into various institutions of complex modern society. Accordingly, students may elect majors in the following divisions of Home Economics:

CHILD DEVELOPMENT AND PARENT EDUCATION
CLOTHING, TEXTILES AND RELATED ARTS
FOODS AND NUTRITION
HOUSEHOLD ADMINISTRATION
HOME ECONOMICS EDUCATION

The chief professional opportunities open to majors in the School of Home Economics are (1) Child Development and Parent Education: Elementary Education; Nursery Education; Education for Parenthood. (2) Foods and Nutrition: Dietetics; Research; Institutional Management; Teaching. (3) Clothing, Textiles and Related Arts: Merchandising; Teaching; Costume Design; Textile Research. (4) Household Administration: Homemaking. (5) Home Economics Education: Teaching; Homemaking.

A two-year terminal course in Home Economics subjects is offered for persons who are unable to complete a four-year course but who would profit from the pursuit of practical homemaking study.

In the first two years, students of Home Economics register for courses that will satisfy college requirements for graduation.

For the convenience of students these requirements are here summarized:

JUNIOR COLLEGE REQUIREMENTS

1. Biological Science ........................................ 8-12 credits
2. Exact Science ........................................... 8-12 "
3. Language and Arts ....................................... 8-12 "
4. Social Science ........................................... 8-12 "

Total .................................................. 32-48 credits
5. Six quarters of Physical Education.
6. Sophomore Composition (English 10 or 11).

All freshmen registering in the School of Home Economics and students transferring from junior colleges who do not have credit for a similar course are required to register for Home Economics Survey 10. This course deals with the orientation of the student into Home Economics and her guidance in the choice of a vocation related to this field. Open to all College women. One credit. Winter, Th. 11.

TWO-YEAR TERMINAL COURSE IN HOME ECONOMICS

A two-year terminal course in home economics is offered for students who, for any reason, do not expect to complete any of the four-year majors in the homemaking group. The course is so planned, however, that students may without undue delay, complete later the work required for a four-year course.

While the course offers a broad foundation in homemaking, it also makes possible a concentration of effort on phases of home economics that will prepare the student for employment in specific fields.

REQUIREMENTS FOR TWO-YEAR TERMINAL COURSE

1. Complete a major of 30 credits in one or more closely related departments of the School of Home Economics.
2. Complete a minor of 15 credits related to or basic to the major field—not necessarily in the School of Home Economics.
3. Twenty-four credits in basic groups:
   a. Language ............................................. 9 credits
   b. Exact Science ...................................... 5 "
   c. Biological Science ................................. 5 "
   d. Social Science ...................................... 5 "
4. Electives—21 credits.
5. Physical Education—6 credits.
Child Development and Parent Education

Associate Professor; EDNA PAGE, Assistant Professor in Charge of Food for Nursery School; ORAL PUGMIRE, Instructor.

(For Curriculum see page 220)

Students who select Child Development and Parent Education as a major are required to complete the following courses: English 24, Nutrition 35, Clothing, Textiles and Related Arts 55; Psychology 110, Zoology 111, Child Development 60, 70, 138, 175 and 190.

Students who select Child Development as a minor should complete Child Development 60, 70, and 175, Nutrition 35 and Psychology 110.

Child Development majors are required to take 15 hours of general Home Economics credit other than those required on the major.

Many students majoring in Child Development also qualify for the elementary teacher's certificate. This may not, however, constitute a minor. Minors must be selected from the subject matter fields.

60. Child Guidance. This course should be helpful to homemakers, preschool and elementary school teachers, social workers, and any others interested in working with young children. One 9, one 10, one 11, one 12, one 2, and one 3 o'clock hour must be free during the week to allow for scheduling three laboratory hours for observation in the nursery school. Students who can free all or all but one of these hours may proceed with registration others should consult with the instructor before registering. A fee of $2 is required to cover the cost of meals in the nursery school. Open to students of sophomore standing or above. Five credits. Fall and Winter each year, also alternate Spring quarters. (Spring 1948.) M. T. W. Th. 1. Sectioned.

60a. Child Guidance. Required of all home economics transfer students who have had only two or three credits in child study. One credit is earned by three hours of observation weekly in the nursery school (see Child Development 60); the other credit is earned by one conference weekly with instructor. A laboratory fee of $2 is required for meals in the nursery school. Two credits. Fall, Winter, Spring. Arranged. Sectioned.


138. Survey in Child Guidance. A study of the history of the child development movement, present agencies and programs operating to further the welfare of children; nursery school administration. Open to Child Development majors only. Five credits. Offered in alternate years only to the combined group of juniors and seniors; offered next in 1947. Spring, Daily 8.

140. Special Problems in Child Development. Open to qualified students majoring in Child Development, upon consultation with instructor. Any quarter. Time and credit arranged.

175. Practice Teaching in the Nursery School. An opportunity to apply the principles of child guidance in the nursery school. Open only to Child Development majors and minors. Prerequisite, Child Development 60. Five to seven credits. Any quarter. Time arranged.

176. Advanced Practice Teaching in the Nursery School. A continuation of Child Development 175; an additional opportunity to work with young children. Open only to Child Development majors. Prerequisite, Child Development 175. Four to six credits. Any quarter. Time arranged.
Clothing, Textiles, and Related Arts

BERTHA F. JOHNSON, Associate Professor; LILLIAN BREHM, Instructor.

(For Curriculum see page 221)

Students who elect Clothing, Textiles, and Related Arts as their major are required to complete the following courses: Clothing 9, 24, 25, 27, 105, 116, 125, 140, 165, 170, 175, 185, 191 and 200; Art 1, 2, 3, 32, 114, 123. Clothing, Textiles, and Related Arts majors may elect to minor in Art, Education, Merchandising, Business, Foods and Nutrition, Child Development, Social Science, Physical Education, English, etc.

Clothing, Textiles, and Related Arts majors to be graduated from the School of Home Economics must have 15 hours of Home Economics besides the major, which should include representative subjects in Foods and Nutrition, Child Development and Household Administration.

Those wishing to minor in Clothing, Textiles, and Related Arts consult with the department head to determine required courses.

5. Dress and Personality Clinic. Open to all College girls desiring assistance in planning and selecting campus clothes to suit personality and income. No construction. Two credits. Fall, T. Th. 1; Conference F. 1; Winter, M. W. 1; Conference F. 1. Staff

9. Clothing for the College Girl. Course designed to assist the College girl in selecting and adapting her clothes in terms of campus activities and personal expressiveness. Construction of one new garment. Open to all College Girls. Three credits. Fall, Winter, Sec. 1, T. 2; Lab., T. 3-5, Th. 2-4; Sec. 2, W. 2; Lab., M. 2-4, W. 3-5; Sec. 3, Th. 9; Lab., T. 9-11, Th. 10-12. Spring, Sec. 1 W. 2, M. 2-4, W. 3-5; Sec. 2 Th. 8, Th. 9, T. 9-11, Th. 10-12. Johnson and Brehm

15. Clothing Selection and Appreciation for Men. Men's apparel as it is related to the wearer. Consideration is given fundamentals of fabric selection. This course is organized to meet the needs of men from all schools of the college. Two credits. Spring, T. Th. 1. Staff

24. Textiles. Fibers, yarns, fabrics, and finishes in relation to problems of the consumer. Prerequisite: Chemistry recommended. Three credits. Fall, Winter, Spring, M. W. 10; Lab., F. 10-12. Staff

25. Clothing Selection and Construction. Consideration is given alteration of commercial patterns, fitting of a basic pattern in muslin, and techniques of designing from a basic pattern. One garment is constructed with emphasis upon selection, fitting, good procedures and finishes. Prerequisites: Clothing, Textiles and Related Arts 9, 24, and prerequisite or parallel Art 2. Three credits. Fall, Sec. 1, W. 2; Lab. M. 2-4, W. 3-5; Winter, Sec. 1, T. 2; Lab., T. 3-5, Th. 2-4; Spring, Sec. 1, Th. 9; Lab. T. 9-11, Th. 10-12. Brehm

27. Household Textiles. Consideration is given fabrics for household and personal use, stressing selection, utilization, care and cost. Prerequisite: Textiles 24. Consumer Education 50 recommended. Three credits. Spring, Sec. 1, M. W. 1; Lab., F. 1-3. Staff

33. Home Furnishings. Planned to develop skill in selection and techniques in making, remodeling, and caring for home furnishings. The laboratory includes instruction on making of draperies, curtains, lamp shades, use of sewing
machine attachments, refinishing and upholstering furniture. Open to all college girls. Outside work required. Three credits. Fall and Spring, Sec. 1, Th. 9; Lab., T. 9-11, Th. 10-12; Winter, Sec. 1, W. 2; Lab. M. 2-4. **Staff**

55. **Fundamentals of Family Clothing.** A survey of family clothing problems with special study and construction of children's garments from the standpoint of the aesthetic, physiological, and psychological development of children of different age levels. Prerequisite: Clothing, Textiles, and Related Arts 9 or 25. Three credits. Spring, T. 2; Lab., T. 3-5, Th. 2-4. **Johnson**

105. **History of Costume.** Development of costume from ancient to modern times. Shows social, economic, political influence on dress and fabric. Modern fashion is interpreted in terms of historic and national costumes and world events. Prerequisite: History 4 recommended. Recommended for students in Home Economics, Costume Art, Physical Education, History, Speech and Dramatics. Three credits. Fall, M. W. F. 9. **Brehm**

115. **Costume Design.** Comprehensive study of art elements and principles of design as related to dress for the individual. Appreciation and ability to achieve beauty and art, quality in dress, in the home, and daily life is the aim of the course. Prerequisites for Home Economics Education and Clothing, Textiles and Related Arts majors: Art 1 and 2; Clothing, Textiles and Related Arts 9, 24, and 25. Art and Clothing to satisfy the instructor for others. Three credits. Fall, Winter, Sec. 1, Th. 9; Lab., T. 9-11, Th. 10-12. Outside work required. **Johnson**

125. **Applied Costume Design.** Creative experience in dress designing by draping on the dress form. Emphasis is placed on fitting and understanding the effect of pattern, grain, and texture on design in dress. Problems consist of making a French lining and draping two garments. Prerequisites: Clothing, Textiles, and Related Arts 9, 24, and 25. Three credits. Winter, M. 10; Lab., W. F. 10-12. Outside work required. **Johnson**

140. **Decorative Textiles.** Historic textiles, including printed and hand woven textiles, tapestries, damasks, oriental rugs, and laces. Laboratory work consists of weaving, needlecraft, and various means of developing decoration for garments, accessories, and household furnishings. Prerequisites: Art 1, 2, 3. Clothing, Textiles and Related Arts 105 and 115 prerequisite or parallel. Three credits. Winter, Th. 9; Lab., 9-11, Th. 10-12. **Brehm**

165. **Advanced Clothing Problems.** Application of techniques used in tailoring suits and coats. Prerequisites: Clothing, Textiles and Related Arts 9, 24, 25, 115. Three credits. Fall and Spring, Sec. 1, T. 2; Lab., T. 3-5, Th. 2-4. Outside work required. **Brehm**

170. **Flat Pattern Designing.** Basic principles underlying the design and construction of patterns for various figures. Includes drafting a basic pattern and provides opportunity for further study in designing, fitting, and alteration of patterns. Prerequisites: Clothing, Textiles, and Related Arts 9, 25, 115, and 125. Three credits. Winter, Th. 9; Lab., T. 9-11, Th. 10-12. Outside work required. **Brehm**

175. **Textile Chemistry.** A study of the physical and chemical properties of the textile fibers, laboratory and household tests used in their identification, and the application of these factors to the choice and care of the fabrics. Consideration is given to the use of the microscope, physical testing and quantitative analysis. Prerequisites: Clothing, Textiles, and Related Arts 24, and 27; Chemistry 10, 11, and 12. Three credits. Outside work required. **Staff**

185. **Family Clothing Problems.** Family clothing problems with emphasis on economic, sociological and psychological aspects. Practical problems may include: clothing budgets, selection of children's clothing, and care and renovation of clothing. Three credits. Fall, Spring, Sec. 1, T. 2; Lab., T. 3-5, Th. 2-4. **Johnson**
190 or 290. Special Problems. Independent study under direction of professor of a problem in clothing, textiles, or related arts in which upper division or graduate student has special interest or need. Consult department head before enrolling. Any quarter. Time and credit arranged.

191. Readings. Reports and discussion on current literature in clothing, textiles and related arts. One credit. Fall, F. 11.

200. Commercial Clothing. Experience is given in constructing garments for the adult figure on a commercial basis with emphasis upon speed, efficiency, and fitting. Field trips to commercial custom tailoring and dressmaking shop and alteration departments to study shop management. Prerequisites: Clothing, Textiles and Related Arts 125, 165 and 170. Three credits. Winter, W. 2; Lab. M. 2-4, W. 3-5.

**Foods and Nutrition**

ETHelyn O. Greaves, Professor; Una Vermillion, Ethelwyn Wilcox, Associate Professors; Edna Page, Assistant Professor; Priscilla Rowland, Louise Pierce, Instructors.

(For Curriculum see page 220)

The Foods and Nutrition major is preparatory training for student dietetic internships, institutional management fellowships, research, journalism or teaching. The basic required courses for all students are: Foods and Nutrition, 20, 21, 106, 107, 141a and 141b, 145, 146, 180, 191; Chemistry 10, 11, 12; Bacteriology and Biochemistry 111 and 112. In addition, certain courses are required for the following fields of specialization.

Dietetic internships and institutional management fellowships: Foods and Nutrition 182, 183; Psychology 102; Education 120; Business Administration 100.

Research: Foods and Nutrition 144.

Journalism: Journalism 12, 112.

Certification for teaching: Education 112, 113, 114, 116, 120, 121, 122, 145; Psychology 102; Physiology 114.

A Master of Science degree is offered in this field.


20. Food Selection and Preparation. A study of food composition, scientific methods of food preparation and food buying problems. Two lectures and two laboratory periods with outside preparation. Prerequisite or parallel, Chemistry 10. Four credits. Fall, T. Th. 8; Lab., T. Th. 9-11. Winter, T. Th. 8; Lab., T. Th. 9-11.

21. Food Selection and Preparation. Continuation of Foods 20 with emphasis placed on meat cookery. Prerequisite or parallel, Chemistry 10. Four credits. Winter, M. W. 2; Lab., M. W. 3-5. Spring, T. Th. 8; Lab., T. Th. 9-11.

100. Quantity Food Preparation for School Lunch and Special Occasions. Designed to meet the needs of teachers of Home Economics in High School. Emphasis placed upon the planning of balanced school lunches. Instruction given in the organization, preparation and service of foods for special occasions involving large groups. Prerequisites for vocational majors: Foods 20 and 21. Others consult instructor. Three credits. Spring, T. Th. 9; Lab., M. or W. 9-12.

106. Meals for the Family. The planning, preparation, and serving of meals for the family with consideration given to the nutritional adequacy of the meals at different levels of income. One lecture and two laboratory periods with outside preparation. Prerequisites: Foods 20 and 21, or Foods 9. Three credits. Fall and Spring, F. 11; Lab., M. W. 11-1.

107. Experimental Cookery. Development of experimental methods; their application to investigation in cookery and food preservation; acquaintance with the literature in the field; preparation of the student for independent investigations in foods. Prerequisites: Chemistry 5 or 11; Foods 20 and 21. Three credits. (Given in alternate years. Given next in 1946-47.) Spring, W. 2. Lab., W. 3-5, F. 2-5.

141a, and b Advanced Nutrition. Application of the fundamentals of biochemistry to the nutrition of man with practice in the calculation dietaries in health. Consideration is given to nutrition of the child at all ages. Prerequisites: Biochemistry 111, 112 or equivalent. Three credits. Fall, M. W. F. 8; Winter, T. Th. 8, M. 1.


144. Laboratory Methods in Foods and Nutrition. Problems in foods and human nutrition including nitrogen, mineral, and vitamin determinations. Prerequisites: Bacteriology and Biochemistry 111 or permission of instructor. Two credits. Winter, T. 9-11, Th. 9-12.


146. Food Technology. A study of manufacture and preservation of food products and the influence of these processes on the physical, chemical, and nutritive values of foods. Prerequisites: Bacteriology 1 and Foods 21. Three credits. Fall. Lect. M. W. 9; Lab., M. 2-5.

160. Special Problems. Open to qualified students majoring in Foods and Nutrition upon consultation with the instructor. Any quarter. Time and credit arranged.

180. Quantity Food Preparation. Principles of cooking applied to large quantity preparation and service; standardization of foods with reference to quality and production cost; use and operation of equipment. Food and service units used as laboratories where students assist in preparation and service of foods in large quantities. Open only to food majors who contemplate entering institutional economics. Prerequisites: Foods and Nutrition 5; Foods 20 and 21. Five credits. Fall, M. W. F. 10; Lab., T. Th. 9-12.
182. Institutional Organization and Management. Principles of scientific management applied to institutions; emphasis on forms of business organization, employer-employee relations, keeping of accounts and inventories and general administrative problems. For majors planning to enter the field of institutional economics. Three credits. Winter, M. W. F. 10. Vermillion


201. Laboratory Methods in Foods and Nutrition. Three credits. Wilcox


210. Research for Master's Thesis. Credit arranged. Wilcox

291. Seminar. Two credits. Wilcox

Household Administration

ALMEDIA P. BROWN, Professor Emeritus; ETHELYN O. GREAVES, Professor.

(For Curriculum see page 223)

A Bachelor of Science degree in Household Administration affords the student a wide choice of courses by requiring only those basic to a cultural training for homemaking. Opportunity is offered for studying effect of social and economic forces on the home and its management.

50. Consumer Education. A study of the consumer's problems as they relate to food, clothing and household management. Emphasis will be placed on money management in the home. Three credits. Spring. M. W. F. 1. Greaves

65. Housing Problems. A social and economic study of the types, organization, plan and equipment of modern housing and the changes brought about by inventions, scientific discoveries, educational progress and other leading developments. Consideration of present housing needs and practices affecting housing construction and home ownership. Three credits. Fall and Spring. M. W. F. 11. Staff

149. Economics of Household Consumption and Production. An economic analysis of household production; source and distribution of family income under different conditions; practice in planning budgets for specific families; and laboratory work in the scientific consideration of household standards and organization. Required of all students before residence in the Home Management House. Prerequisites: Foods 20, 21, and 106 for all Home Economics Education students; others, Foods 9 and 106. Three credits. Fall, and Winter, M. W. 11; Lab., F. 11-1. Greaves

150. Residence in the Home Management House. A half quarter residence in the Home Management House affording senior college and graduate women an opportunity to apply principles of scientific and practical management of actual home problems. Prerequisite: Home Economics 149 or concurrent registration. Three credits. Any quarter. Time arranged. Brown
Home Economics Education

W. Virginia Phillips, Associate Professor.

Education 120. Methods in Teaching Home Economics. Contributions of Home Economics to the educational program. Analysis of teaching situations based upon observations of school activities; an appreciation of methods of teaching in education for home and family living. Prerequisite or parallel: Psychology 102. Three credits. Fall, Spring, T. 7-9 and Th. 8. (Phillips

Education 121. Problems in Teaching Home Economics. Study of recent investigations in field and Home Economics and their bearing upon Home Economics curriculum and teaching methods. (Especially for teachers who are to qualify for a Vocational Certificate. It is suggested that Education 112 and 113 be taken daily the first three weeks and daily the last three weeks of the term simultaneously with this course in Fall and Education 112 and 114 under the same arrangement in winter.) Prerequisite: Education 120. Four credits. Fall, Winter, 10-12; 1-3. Spring, time arranged. (Phillips

Education 122a. Student Teaching in Home Economics. Observation and teaching of homemaking under supervision in public schools having cooperative arrangement. Student teachers leave the campus the middle five or six weeks of Fall or Winter and teach each day a full homemaking program in one of the approved schools. An occasional student may find it impossible to do the teaching on this block plan. Such a student must receive approval of the instructor of Education 121 and 122, preferably at beginning of her junior year, to make other arrangements for her student teaching. In the latter case, the student teacher will teach at least two hours daily in an approved local school in Spring. Prerequisite: Education 120 and Education 121. Eight credits. Winter, time arranged. (Phillips

Education 122. Student Teaching in Home Economics for Dietitians. For student dietitians whose responsibilities will involve teaching student nurses, student dietitians, and patients. In Spring the student teacher will teach at least one hour daily in an approved local school. Prerequisite: Education 120 with Education 121 taken the same quarter as Education 122b. Four credits. Spring, time arranged. (Phillips

Home Economics 199. Special Problems in Home Economics Education. Developed around individual needs of students which are not otherwise provided for in curriculum. 1-2 credits. Any quarter. Time arranged. (Phillips
DEPARTMENT OF
MILITARY SCIENCE AND TACTICS

COLONEL E. W. TIMBERLAKE, C.A.C., Commandant, P. M. S. and T.

Basic Courses ................................................. 239
R. O. T. C. Band Courses ................................. 240
Advanced Courses ........................................... 240
General Information


UTAH State Agricultural College, having accepted the provisions of the Act of Congress approved July 2, 1862, is classified as a Land-Grant College and is therefore obliged to offer a course in Military Science and Tactics as a part of the College curricula. The obligations to provide military instruction on Land-Grant institutions by the Act of July 2, 1862, are not altered by the National Defense Act of 1920 as amended.

Recognizing that preparation for national defense is an important duty of citizenship, and that qualities of patriotism, loyalty, discipline, leadership, and respect for constituted authority inculcated by proper military training are valuable in the formation of character, it has been the consistent policy of the College to cooperate with the Federal Government in making the Department of Military Science and Tactics as effective as practicable.

At the request of the College authorities a senior unit of the Reserve Officers' Training Corps was authorized at this Institution by the President of the United States under the provisions of Section 33 of the Army reorganization Act of June 4, 1920. Accordingly, the Board of Trustees has agreed to maintain a two-year basic course in Military Science and Tactics as a required subject for all qualified male students.

The primary object of establishing units of the Reserved Officers' Training Corps is to qualify students for appointment in the Officers' Reserve Corps of the United States Army. This training will also be as valuable to the student in his industrial or professional career as it would be should the nation call upon him to act as a leader in its defensive forces.

Enrollment in the Reserve Officers' Training Corps is not in any sense "conscription," nor does it convey liability to service in any component or branch of the United States Army. As its name implies, the R. O. T. C. is an instrument of training and instruction only.

Military Science Regulations

The student, by registration at the Institution, obligates himself to conform to such requirements as are or may be prescribed by the College under regulations of the Reserve Officers' Training Corps. These requirements follow: Two years of military training (six credits) are required of all qualified male students. By regulation of the College the basic course is normally required during the first and second years at the Institution.

To remain in and receive instruction at the College or to graduate from the College, the student must attend military classes and do satisfactory work in them.

It shall be the duty of every student of whom military training is required, to see that he is properly registered for the course and to report for instruction. Students who are required to take military training but fail to register or to report for classes will, with the approval of the President, be excluded from all classes in the College. The responsibility of complying with the regulations regarding Military Science rests entirely with the student.

No male student will be excused from the requirements in Military Science except for the following reasons:

a. Students who, upon examination by the College Medical Examiner, fail to meet the physical requirements for military service are excused from Military Science, this includes those students who have served in the armed forces of the United States and were given a medical discharge. (Par 19-a, A. R. 145-10.)
b. Students over 25 years of age at the time of original entrance into the College are excused from Military Science. (Par 18-a, c-4, A. R. 145-10.)

c. Students who are not citizens of the United States and who do not intend to become citizens are not permitted to take military training. (Par 18-a, C-4, 145-10.)

d. Students who are active in the Army, Navy, or Marine Corps of the United States, or who are commissioned officers of the National Guard or Naval Militia, or reserve officers of the Military or Naval Forces of the United States, are not permitted to enroll in the Reserve Officers’ Training Corps. (Par 18-a and Par 20, C-4, A. R. 145-10.) When desired by institutional authorities, students who cannot be enrolled in the R. O. T. C. may be permitted to pursue the R. O. T. C. without expense to the government.

e. Students who have completed one, two, or three years junior R. O. T. C. in good standing may be given appropriate exemptions. (Par 47, A. R. 145-10.)

f. Veterans of the Army, Navy, Marine Corps and Coast Guard who have been honorably discharged or transferred to the reserve will be given six credits in M. S. and T. and exemption from further training.

g. Special students below college grade are excused from the requirements in Military Science.

A student claiming exemption from Military Science for any of the reasons noted above will present a petition for such excuse at the time of registration. Pending the action of the petition, the student will register for the course prescribed for his class and will enter upon the work of such course.

Any student who may be excused from attendance in Military Science for any valid reason must make up the deficiency in other departments of study.

Every student registered for Military Science is required to make a uniform deposit of $5. A laboratory fee of $1 will be deducted from this deposit. The balance, less the cost of any property lost or damaged, will be refunded upon the completion of the year or upon withdrawal from the course.

Reserve Officers’ Training Corps

The four years’ course in the Reserve Officers’ Training Corps is divided into the basic course and the advanced course.

The basic course consists of the first two years in Military Science and normally corresponds to the freshman and sophomore years. When entered upon by any student, it shall be a prerequisite for his graduation unless he is relieved from this obligation by proper authority. Students transferring from institutions not having R. O. T. C. Units must enroll.

The advanced course consists of the third and fourth year of Military Science. Entrance upon the advanced course is elective, but once entered upon, it becomes a prerequisite for graduation, unless the student shall be honorably discharged in accordance with provisions of Army Regulation 145-10.

Student electing Military Science as a major subject should do so at the beginning of the freshman year in order that sufficient time may be available to complete the Advanced Course. The School of Arts and Sciences offer a major* in Military Science.

Uniforms and Equipment

A serviceable uniform of standard army pattern is furnished by the War Department to each student taking military training. Shoes are not furnished. Each student should provide himself with a pair of brown shoes before entering the College, as they will be required immediately upon his admission.

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* A Department Major in the School of Arts and Sciences is offered in Military Science and Tactics. Prescribed requirements are: M. S. and T. 36 credits, Mathematics 34, 35, 46, 97, 99, min. 30 credits; French, German, Portuguese or Spanish, two years; Surveying 81, 82 and 83, 8 credits; Chemistry 3, 4 and 5 or 10, 11 and 12, 15 credits; Physics 20, 21 and 22, 15 credits; Political Science 10 and 102, 8 credits; History 17 and 21, 10 credits.
The uniform and equipment issued for the use of a student remains the property of the United States. At the end of each year, or at such other times as students may terminate their military training, all clothing and other supplies will be returned in a serviceable condition, not later than one week following the termination of such training. Articles which have been lost, damaged, or destroyed will be charged against the student concerned.

Basic Course

Students in the basic course are required to pursue their courses diligently until satisfactorily completed, and to meet such requirements for care of equipment as may be prescribed. In case of failure in any quarter, the student is required to repeat the work.

Advanced Course

The advanced course is elective. The selection of students for enrollment in the advanced course is made by the President of the Institution and the Professor of Military Science and Tactics, as provided in Section 47c, National Defense Act, from qualified students as follows:

1. Age. No applicant is admitted to the Advanced Course who is less than 19 or more than 26 years of age at the time of admission.

2. Physical Standards. The standards as prescribed for appointment in the Officers' Reserve Corps, in AR 40-105 or 40-110, as appropriate, apply.

3. Mental and Educational Standards.
   a. A minimum AGCT Score of 110 is required.
   b. The fact of enrollment at the college level in the Institution is accepted in satisfaction of educational requirements.
   c. The applicant must spend at least two academic years to complete all requirements for graduation from the Institution, or if a graduate student, must spend a like period to complete all work for an advance degree.

4. Credit for active military or naval service in lieu of the Basic Course. R.O.T.C. Veterans who have been honorably discharged, or transferred to the Enlisted Reserve Corps and relieved from active duty, are given credit under the provisions of Public Law 81—79th Congress, in lieu of completion of all or part of the basic course, R.O.T.C., on the following basis:
   a. For not less than six months' active service in the Army, Navy, Marine Corps, or Coast Guard, credit in lieu of the first year basic course.
   b. For not less than one year of such active service, credit in lieu of the entire basic course.

5. Selective Service Status. Formally enrolled members of the advanced course are exempt from registration, induction, training or service under the Selective Training and Service Act of 1940, as amended.

6. Conditions of Service. All advanced course students are civilians, who are placed under contract with the government. The contract contains the following provisions:
   a. The student agrees:
      (1) Unless sooner discharged for the convenience of the Government, to complete the Advanced Course and to attend the Advanced Camp at the time specified by proper authority.
      (2) To accept an appointment as Second Lieutenant, Officers' Reserve Corps, if tendered.
7. All members of the Advanced Course receive the following emoluments:
   a. A monetary allowance in lieu of subsistence, equivalent to the current value of the garrison ration, to be paid monthly during the periods of enrollment in the advanced course less the period of the Advanced Camp. The total period will not exceed two calendar years. This allowance is paid in addition to benefits authorized by the GI Bill of Rights.
   b. A garrison uniform, complete with field overcoat and shoes, except at institutions which prescribe a distinctive cadet uniform for their students.
   c. The pay of the seventh enlisted grade while at Advanced Camp, and travel pay from the institution to and from camp at the rate of five cents per mile.
   d. R.O.T.C. texts are furnished on a loan basis. Certain designated texts may be retained by students.

R. O. T. C. Band

A military band is an element of the Reserve Officers’ Training Corps, under the direction of the Band Instructor, and is governed by the rules of the Department of Military Science and Tactics. Uniforms and instruments are furnished by the War Department.

Members of the band will be selected from among those students who are registered in Military Science and who have demonstrated their ability for such selection. Tryouts for the band will be conducted under the supervision of the Band Instructor and will be held preferably during the first two weeks of each quarter. Members of the band receiving credit in Military Science will be limited to not more than sixty students.

Students who are selected for the band will be required to take such theoretical work in Military Science as may be prescribed by the Professor of Military Science and Tactics, and sufficient practical drill to insure their making a creditable appearance in ranks.

Instruction taken by members of the band is credited as instruction in Military Science, but will not be accepted toward qualification for admission to the advanced course.

Credits

Students satisfactorily completing the basic course receive one credit per quarter, which may be included in the 186 credits required for graduation.

Students satisfactorily completing the advanced course receive four credits per quarter, which count toward the 186 credits required for graduation. In addition, students enrolled in the advanced course will receive six credits for satisfactory completion of the six weeks’ course at the Advanced Camp, conducted annually and normally attended after completion of the first year of Advanced Course.

Students majoring in the Schools of Arts and Sciences, and Engineering may submit Advanced Military Science as a minor for graduation.

Members of the band who successfully complete the work in the various quarters receive credits as follows: First and second years, one credit per quarter in Military Science.

Courses of Instruction

Classes in Military Science will not be held at times other than as scheduled, but any student desiring extra instruction may make the necessary arrangements with the Professor of Military Science and Tactics.

BASIC COURSES

1, 2 and 3. Military Science. First year. Fall, Winter and Spring. One credit per quarter.

The programs of instruction for post-war R. O. T. C. have not reached their final form. When published they will govern the course of instruction. It is contemplated that the new courses will contain the latest developments and trends in Tactics and Technique. The latest materiel will be available to supplement the instruction. Classes in Theory, T. 9, 10, or 11, and Lab., T. and Th. 1-2. 

R.O.T.C. BAND COURSES

1B, 2B, 3B. R.O.T.C. Band. First year. One credit per quarter. T. Th. Christiansen

4B, 5B, 6B. R.O.T.C. Band. Second year. One credit per quarter. T. Th. Christiansen

ADVANCED COURSES

101, 102 and 103. Military Science. The programs of instruction for post-war R. O. T. C. have not reached their final form. When published they will govern the course of instruction. It is contemplated that the new courses will contain the latest developments and trends in Tactics and Technique. The latest materiel will be available to supplement the instruction. Four credits per quarter.

104, 105 and 106. Military Science. The programs of instruction for post-war R. O. T. C. have not reached their final form. When published they will govern the course of instruction. It is contemplated that the new courses will contain the latest developments and trends in Tactics and Technique. The latest materiel will be available to supplement the instruction. Four credits per quarter. Fall, Winter, Spring. M. W. F. 9, 10 or 11. T. Th. 1-2. Staff

ADVANCED CAMP

Advanced R.O.T.C Camps of six weeks' duration will be conducted annually at military reservations to be designated by the War Department. Students will be required to complete the camp program unless sooner discharged from the R.O.T.C. for the convenience of the Government, and will normally attend immediately after completing the first year Advanced Course. The Camp program will consist of theoretical and practical instruction in technique tactics and leadership. Credits for Advanced Camp: six credits.
RESEARCH AND EXTENSION

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AGRICULTURAL EXPERIMENT STATION
R. H. WALKER, Director

The Agricultural Experiment Station, established in 1889, is a major division of the College. It is charged with the responsibility of conducting research in Utah under provisions of the Hatch, Adams, Purnell, and Bankhead-Jones Acts of Congress, and of various acts of the Utah State Legislature. Its primary objective is to conduct experiments and scientific researches that have for their purpose the establishment and maintenance of a permanent and efficient agricultural industry and the development and improvement of the rural home and rural life. The research results are prepared for dissemination in the form of bulletins and scientific articles. They form the basis for much of the work of the Agricultural Extension Service.

The staff of the Agricultural Experiment Station numbers approximately 60, many of whom are also members of the teaching faculty of the College; some of them also divide their time with the Agricultural Extension Service of the College. In addition, several employees of various bureaus of the U. S. Department of Agriculture are assigned to work on the campus and collaborate in the agricultural research program of the station.

The main offices of the Agricultural Experiment Station, including the office of the Director, and the Division of Publications, are on the College campus, on the first floor, south wing of the Main Building. Most of the research laboratories used by the Experiment Station are also on the campus, distributed as necessary among the various College buildings.

Greenhouses are maintained for investigations in horticulture, vegetable crops, agronomy, botany, plant pathology, entomology, bacteriology and range management.

Livestock husbandry investigations are conducted at the barns on the college campus, at the Branch Agricultural College, at the U. S. Forest Service Desert Range Station, and on the ranges in different parts of the state.

The Station also maintains a number of experimental farms:

- At the Dairy Experimental Farm, composed of about 100 acres of land, barns and a house, the Station, in cooperation with the United States Bureau of Dairy Industry, maintains an experimental Holstein dairy herd of about sixty pure-bred animals. Pasture investigations are also conducted here.

- The Greenville Farm, a 45-acre tract, is used for experimental work in plant breeding and other phases of crop production.

- The Davis County Farm at North Farmington is a 50-acre tract used for experimental work in horticulture and vegetable crops.

- At the Nephi Farm Substation, experimental work in dry farming and range seeding is conducted. This farm is composed of 103 acres.

- The Forage Experimental Farm, a 42-acre tract located south of Logan, is used in cooperation with the U. S. Bureau of Plant Industry, Soils and Agricultural Engineering for study of the improvement of forage plants. Here special attention is given to the development of improved plants for irrigated pastures and for range lands.

- The Horticultural Farm located in Weber County north of Ogden is a 71-acre tract used for investigations in fruit production.

The Station also owns farm plots near the College and in Washington County, and rents land for experimental purposes in various parts of Utah.

Other investigations not involving land use are conducted throughout the state. Among these may be mentioned the soil survey work; plant disease surveys, problems of injurious insect control; problems connected with land use, agricultural marketing and farm management; studies of the social prob-
lems connected with rural living; the gathering of snow survey data, problems connected with irrigation and the surveying of range resources.

The research facilities have a three-fold importance in the institution: First, they make it possible for the teaching faculty to fortify instruction with the results of original research; second, they afford advanced students an opportunity to keep in touch with research methods and facilities; and third, they offer employment to students qualified to act as research assistants or laboratory aids. Between fifty and one hundred students thus employed are on Station payrolls each month of the school year. Several find employment in laboratories and on the experimental farms during the summer months.

Major lines of research now in progress include projects in the departments of Agricultural Economics, Agronomy and Soils, Animal Husbandry (including Dairy and Poultry Husbandry and Veterinary Science), Botany and Plant Pathology, Bacteriology, Entomology, Home Economics, Horticulture, Human Nutrition, Irrigation and Drainage, Physics, Range Management, Rural Sociology and Vegetable Crops.

ENGINEERING EXPERIMENT STATION

By act of the Board of Trustees of the Utah State Agricultural College, December 2, 1918, the Utah State Engineering Experiment Station was established to serve the State in a manner broadly outlined as follows:

(1) To serve those industries and utilities affecting the agricultural and rural populations of the State and to aid public officials and teachers by making engineering investigations of significance and interest to them.

(2) To further the development of methods of processing and use of waste products from agriculture.

(3) To develop methods of processing and making available for use the undeveloped agricultural and industrial raw materials of the State.

(4) To further develop the science of Irrigation and Drainage to the end that the land and water resources of the State may be most fully utilized.

(5) To stimulate a greater use of native materials in rural housing and farm structures.

(6) To develop applications and uses of power equipment and to help solve problems relating to the water supply and sanitation of the farm home.

(7) To develop new tillage, harvesting, and weed control equipment.

(8) To develop new methods and uses of native materials in the construction of farm to market roads and highways.

(9) To cooperate with the Federal government in the conducting of investigations along these and other lines of engineering in harmony with the functioning of the Land-Grant College.

(10) To stimulate and elevate engineering education by developing the research spirit in faculty and students.

(11) To publish and distribute through bulletins, circulars, and technical articles in periodicals the results of such studies, surveys, tests, investigations and researches as will be of greatest benefit and interest to the people of Utah.

The Engineering Experiment Station is an integral part of the School of Engineering, Industries and Trades, and the laboratory facilities and shops of the School of Engineering are available for the investigational work of the Station to extent of sums allocated for their operation and support.

The Dean of Engineering is Director of the Station, and the staff is composed of members of the teaching staff from the School of Engineering,
Industries and Trades and from other departments whose work is directly related to the work of the Station and of research fellows who are pursuing graduate study and are assigned part time to work in the Station.

Station bulletins and circulars are published from time to time representing the results of research projects.

EXTENSION SERVICE

W. W. Owens, Director

The Extension Service stands for better farm and home management and better living with emphasis on the family sized farm. The income from farming cannot all be measured in terms of cash, part of it consists of fresh food, comfortable home and pleasant surroundings. The stability of ownership and close contact with nature develop virtues in the farm family which makes it the highest type of American citizens.

To accomplish the above objectives work is planned along the following lines:

1. To increase the net income of the farmer through more efficient production, marketing and use of capital and credit.

2. To promote better homes and a better standard of living on the farm.

3. To develop rural leaders, through short leader training courses on both state and county levels and through individual guidance.

4. To promote the mental, social, recreational, educational and community life of rural people.

5. To help in a program that will add beauty and other living satisfactions to rural homes.

6. To implant a love and appreciation of rural life in farm boys and girls. This is accomplished largely through the program of 4-H Clubs.

7. To enlarge the vision of rural people on national and world affairs.

8. To acquaint the public with the importance of agriculture in the national life.

9. To assist in agricultural marketing and purchasing problems.

The Extension Service works through county and community planning committees, using their studies and recommendations as bases for the Extension program within the county. It also works with all other existing rural organizations to reach the largest possible number of people. Individuals may receive attention, however, upon personal requests. Assistance is given men, women, boys and girls in farm and home problems. Information on problems of common interest to groups is given in project form, and followed up progressively until satisfactory solutions are found and approved practices established. Information is also disseminated by demonstrations, lectures, filmstrips, motion pictures, news articles, radio, and illustrations. Materials for much of the scientific data imparted by the Extension workers are supplied by the Experiment Stations. The State Specialists work with the County Agricultural and Home Demonstration agents and leaders in assembling information and determining methods of solution to their problems. Voluntary project leaders chosen from communities are trained by specialists and county agents to assist in organizing and leading project groups.

The Extension Service cooperates with the Farm Bureau, the State Department of Agriculture, other state departments dealing with agriculture and homemaking, churches, and all agricultural commodity organizations. It also works closely with all federal agricultural agencies operating within the state.
It has a special assignment by federal law, of recruiting, training and placing agricultural labor within the state.

The list of projects carried by the Utah Extension Service Staff follows: irrigation, fertilizers, crop improvement, range reseeding, land use, erosion control, farm management, weed control, rodent control, insect control, plant disease control, farm forestry, fire control, horticulture, gardens, livestock management, breeding, feeding, bull grading, production records, dairying, dairy manufacturing, wool production, poultry, animal disease and parasite control, farm buildings, farm accounting, farm machinery, marketing, foods and nutrition, clothing, home furnishings, home management, home accounts, health, electrification, landscaping, civic improvements, savings and investments, 4-H work with youth, leader training.

SUMMER SESSION

M. R. MERRILL, Dean

For more than 30 years the College has conducted Summer School as an important part of its educational program. Since 1924, the offering has been materially enlarged and enriched and a very stimulating lecture course established. The purpose of this large educational undertaking is to bring to Logan, with its delightful summer climate and many recreational features, a number of the leading educators of the nation, and build, in the Intermountain West, a Summer School of wide influence.

During the Summer School nearly all departments of the College offer courses, the program being arranged to meet the particular needs of summer students. The courses offered in Education, Psychology, and related departments make it possible for the students to meet all of the requirements for Utah certification for High Schools, Junior High Schools, and Elementary Schools. The curriculum will also meet practically all of the requirements for certification in surrounding states.

In past years the majority of summer students have been teachers in secondary and elementary schools. At present an increasing number of regular students are entering through the summer. High school graduates are also entering the college immediately rather than postponing entrance to the Fall Quarter. Returning service men and women are particularly interested in a regular summer program inasmuch as nearly all of them wish to complete their education as quickly as possible. The summer curriculum is being arranged to meet this trend. Consequently, practically all of the departments are offering at least part of their regular program during the Summer Quarter.

Graduate Credit

Summer School students are allowed six years in which to satisfy requirements for the Master of Science degree, but they may complete the requirement for this degree by attendance at three Summer Schools. This makes it possible to secure this degree without giving up present teaching employment. Those who expect to register for work leading to this degree should submit their credits to the dean of the Graduate School several weeks in advance of registration and indicate the subject in which they wish to major. This will make it possible to have the course of study approved at the time of registration.

EXTENSION CLASSES, CORRESPONDENCE STUDY,
BUREAU OF VISUAL AIDS IN EDUCATION

L. G. NOBLE, Director

Utah State Agricultural College through the Extension Class Program, Correspondence Study Courses and Visual Aids in Education is prepared to give assistance to individuals and community groups interested in educational and cultural programs.
EXTENSION CLASSES. Extension Classes are offered in practically all subjects. In-service helps to teachers are available in every department including classes for the renewal of teaching certificates. Classes will also be provided in vocational fields and for special-study groups.

Invitation to Learning: A series of book reviews and special lectures is being prepared and will be available to the public at the opening of the College in September, 1946. These reviews will center around the great books of the past and the present and will afford opportunity for study and discussion of the important issues before the world.

CORRESPONDENCE STUDY. Utah State Agricultural College was one of the first educational institutions of the Intermountain Region to establish a Home Study Department. Correspondence Study furnishes an excellent opportunity for systematic instruction to students of High School or College grade and to all adults who desire to obtain information in selected fields.

Students must be at least nineteen years of age, or must submit fifteen units of high school work, or must be graduates of a high school for admission to Correspondence study courses of college grade. One-fifth of the credits (37) necessary for a degree may be earned through this department.

In the College division a wide variety of subjects is offered in the following departments: Agricultural Economics and Marketing, Agronomy, Animal Husbandry, including Poultry and Dairying, Art, Bacteriology, Business Administration and Accounting, Economics, Education, English, Entomology, Forestry, Geology, Home Economics, History, Horticulture, Irrigation and Drainage, Mathematics, Political Science, Psychology, Public Health and Zoology.

Preparatory or high school courses are offered for those who have been unable to complete their high school courses and who wish to satisfy the entrance requirements of the College and also for those who wish to fit themselves for careers in which the equivalent of a high school education is necessary.

A special catalog of Correspondence Study Courses will be mailed on request.

VISUAL AIDS IN EDUCATION. The service of the Bureau of Visual Education is being made available to all schools, clubs and community groups. At present the Bureau is especially prepared to give service in the fields of Agriculture, Home-making and Recreational Activities. New films on timely topics and subjects are being added to the Library constantly. Individuals and school and community groups are invited to contact the Bureau with their visual education problems.

Catalog information and instructions on how to obtain department films from the various depositories in the United States is available in this office.

BRANCH AGRICULTURAL COLLEGE
H. WAYNE DRIGGS, Director.

The Branch Agricultural College was established in 1913 as a branch of Utah State Agricultural College. It had been, since 1897, a Normal school and a branch of the State University. The change was made to meet the growing agricultural needs of Southern Utah. Since the primary object of the school is to serve the people and train the youth of Southern Utah to become home and community builders, the Branch College offers a thorough and liberal education in keeping with state law, in the branches of Agriculture, Home Economics, Vocational Industrial Education, Basic Arts and Sciences, Business Social Sciences and Normal Training, with courses which parallel those of the lower division of the parent institution.
Beginning with 1936-37 school year, the Board of Trustees authorized the addition of Senior Division courses in Agronomy, Animal Husbandry, and Agricultural Economics and related work. This enables students in Agriculture to obtain a B.S. degree in these departments with one year of additional work at Utah State Agricultural College, Logan.

The Extension Service and the Agricultural Experiment Station are closely connected with the B. A. C., and certain members of the resident staff at Cedar City are also members of the staff of these two divisions. The Deans of the parent institution supervise closely the work of the corresponding divisions here.
GRADUATE SCHOOL

B. L. RICHARD, Dean.

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THE GRADUATE SCHOOL

Objectives and Organization

The Graduate School of the College is organized to serve the educational needs of men and women who have completed their undergraduate work and who desire to qualify themselves for professional services or who may wish to identify themselves with a program of higher education leading to a teaching or research career on a college or university level. In all advanced work, effort is made to bring the student into direct contact with the basic research and teaching activities in his chosen field to the end that he may obtain a comprehensive view of a specialized field of knowledge together with the training essential for effective teaching or independent investigation. Requirements for graduation with an advanced degree consist of a high grade of scholarly work rather than the fulfillment of routine course requirements.

Faculty members with advanced degrees constitute the graduate faculty in the College; however, departments in related fields or in natural educational areas charged with the responsibility of giving graduate work are grouped into sections, which function as basic units within the Graduate School. These sections serve (1) to determine the needs for graduate work within the area; (2) to provide a fundamental and basic core of course work or training within the area; (3) to foster and promote the spirit of scholarship and research and determine standards of achievement characteristic of the area involved; (4) to promote institutional standards and give institutional character beyond that which is made possible by independent departmental direction.

All advanced work in the College is administered under the direction of the Dean of the Graduate School. Inquiries concerning graduate studies should be addressed directly to the Dean of the School.

Admission and Registration

To be admitted to the Graduate School the applicant must be a graduate with a bachelor's degree from an accredited college or university. Applicants from institutions other than Utah State Agricultural College are required to submit a certified statement of graduation together with a transcript of all credit earned. Although the College does not provide a formal application blank, the student will avoid much delay by sending such credentials to the Dean of the Graduate School some weeks before the quarter he intends to matriculate. Seniors in the College who lack not more than five credits for completion of all requirements for the bachelor's degree may carry a limited amount of graduate work during their last quarter as undergraduates, provided that the total number of credits for which they are registered during that quarter does not exceed sixteen and provided their average grade of all work is "B" or better.

Students are admitted to graduate studies in social work who have taken a Bachelor's degree with: (1) a major in social work; or (2) a major in sociology, economics, political science or psychology and have a total of not less than 36 credits in these four departments; or (3) a major in child development, physical education, public health or education and who also have 26 credits in one of the four social sciences above listed with a fair balance among them.

Students expecting to enter social work should have personal qualifications which give promise of fitting them for this work and should be under 35 years of age. Students over 35 are admitted only by special arrangement.

All students registering in the Graduate School must have their registration cards signed by the Dean of the School. Registration in the Graduate School does not imply admission to candidacy for an advanced degree. Such admission is granted by the Dean only on recommendation of a special advisory committee as explained below.
GRADUATE SCHOOL

Master of Science Degree

All approved courses of study in the various departments in the Graduate School lead to the Master of Science degree. Necessarily, the work for a Master of Science degree is highly specialized and all studies must be in the field of the major or closely related fields. The following departments in the College offer work leading to the Master of Science degree:

Agronomy and Soils, including also Soils Chemistry (administered jointly with the Chemistry Department) and Soils Physics (administered jointly with the Physics Department)
Agricultural Economics
Animal Husbandry
Bacteriology
Biochemistry
Botany (Plant Taxonomy and Plant Pathology)
Chemistry
Dairy Manufacturing (Dairy Chemistry, jointly with the Chemistry Department; Dairy Bacteriology, jointly with the Bacteriology Department)
Economics
Education (Administration and Supervision, Elementary Education, and Secondary Education)
Engineering
Geology
Home Economics Departments
Industrial Education
Physical Education and Recreation
Political Science
Psychology
Range Management
Sociology
Physics
Wildlife Management
Zoology and Entomology

Requirements and Procedure for Obtaining a Master of Science Degree

1. Acceptance for registration as a candidate for a Master's degree: All students wishing to become candidates for a Master of Science degree will apply directly to the Dean of the Graduate School. To be accepted as a candidate the applicant must have the approval of the head of the Department in which he wishes to do his major work and of a special advisory committee appointed by the Dean of the Graduate School. Application blanks are available at the office of the Graduate School.

2. Major professor and advisory committee: The applicant will be assigned by the Dean of the Graduate School to a major professor whose duties shall be to advise the student in the planning and the prosecution of his course of study and research and to make arrangements for examinations. The major professor will be aided by an advisory committee consisting of himself as chairman, and at least two other members chosen from the faculty of the major department or closely related departments. The Dean of the Graduate School and the head of the Department are ex officio members of all advisory groups.

3. Preliminary examinations: By examination of the records of the student's previous work, and by such examinations of the student, oral or
written, as they may consider advisable, the advisory committee shall satisfy themselves as to the adequacy of the student's preparation and the advisability of his pursuance of graduate work.

4. Program of study: If the advisory committee is convinced that the preparation and ability of the students are such as to give reasonable assurance of success in advanced studies, then, with him, the committee shall plan a program of study which will meet all requirements for the Master of Science degree. This program must include in general:

(a) At least three quarters of residence. (Four summer sessions with additional non-residence research may be accepted as fulfilling their residence requirements.) Nine credits in Correspondence and Extension work may be acceptable as part of the 45 credits required for the degree. Graduate work done at other accredited institutions also may be accepted. The amount of such credit allowed will be determined in each case in connection with an examination of the whole proposed program of study. In general, not more than 15 credits from other institutions will be accepted.

(b) At least 45 credits in courses numbered 100 or over in addition to any lower division courses (number below 100) which may be necessary to strengthen the undergraduate preparation.

(c) At least ten credits exclusive of work connected with the thesis, shall be in courses numbered 200 or above.

(d) All courses shall be in the major department or closely related fields.

(e) Not more than 16 credits to be allowed in any one quarter and each course in the accepted program must be completed with a grade of "B" or above.

(f) A thesis with 9 to 15 credits.

Any modifications of these requirements or other conditions requiring action of the Dean of the Graduate School will be considered only if they are submitted by the applicant's advisory committee as part of his entire proposed program of study.

5. Application for candidacy: Having arranged a proposed program of study and research, the student will submit his plan and make application to the Dean of the Graduate School to become a candidate for the Master of Science degree.

Those applicants who plan to receive the degree at the end of the Spring Quarter should submit the application not later than the first Friday in the Winter Quarter. In general, the application must be submitted prior to the completion of more than one-third of the work necessary to meet requirements for the degree. Students employed part-time at the College, who expect to take two years or more to complete work for the Master's degree, should not wait until the first Friday of the Winter Quarter next preceding their graduation to make application for candidacy.

Notice of admission to candidacy, together with a letter of instructions, concerning the thesis form, and final examination, will be sent to the candidate by the Dean or his secretary. A form on which to make application for graduation will also be enclosed with the letter. This form calls for the payment of a fee of $10.00 for binding two copies of the thesis.

6. A semi-final draft of the thesis should be approved by the major professor and members of the advisory committee at least one week before the final examination, which must be taken not later than April 30. The final draft may be completed after the examination. A typewritten and a carbon copy of the final draft, with the signatures showing approval by the major professor and the Dean of the Graduate School, must be submitted to the Librarian of the College. If the degree is to be received at the June Commencement, this must be done not later than the May 20 preceding commencement.
7. Final Examination: Each candidate will be given a final examination by his advisory committee, which may be enlarged by action of the Dean of the Graduate School. This examination may be oral or written or both, as his committee may decide. The examination is open to all faculty members and will be chiefly on the thesis, but may cover any fundamental knowledge required for the carrying out of the research work or necessary to the conclusions reached. Arrangements for the time and place of the examination are to be made by the Dean of the Graduate School. A member of the Advisory Committee, other than the major professor, will be selected to act as chairman at the examination. For candidates who are to receive the degree at the June Commencement, the date of the examination must not be later than April 30. When the examination is passed successfully, and the thesis submitted to the Librarian, the Dean of the Graduate School will present the name of the candidate to the college faculty for approval for the Master of Science Degree. He will also send the candidate instruction for attendance at Commencement and any other necessary information.

Delayed Completion of the Proposed Course of Study. If the student is for any reason delayed in the completion of his proposed plan of study as offered in his application for candidacy, and is unable to complete it in the time proposed, a reasonable extension of time may be granted on the recommendation of the major professor or chairman of the advisory committee.

If the student wishes to renew his status as candidate after the lapse of a prolonged period of absence from the work, he must satisfy his major professor and advisory committee of his fitness for candidacy and make an application for renewal of his candidacy before resuming his work.

Graduation at the Close of the Summer Session. All students who satisfy the requirements for graduation by the close of the Summer Quarter are listed with the class of the following year and will receive their public graduation at the following Commencement. The graduation of such students, however, will be certified by proper authorities of the College as soon as their work is completed.

The Degree of Doctor of Philosophy

The College offers advanced training leading to a Degree of Doctor of Philosophy in a limited number of fields. With its cooperative connections with various state and Federal research agencies the College is well equipped to maintain its leadership in the field of irrigation and drainage, in soil physics and in various other phases of soil science.

More detailed information can be had by writing the Dean of the Graduate School.

TEACHING ASSISTANTSHIPS

Several teaching assistantships in various departments of the Institution are available each year to graduate students. Students must apply to the department which offers the assistantships in which they are interested. For the coming year, these assistantships will carry remuneration of $400 plus remission of resident fees. At the present time they are available in the following departments:


AWARDS AND SCHOLARSHIPS

School of Agriculture

Agricultural Experiment Station Research Fellowships. A number of the departments of the Agricultural Experiment Station offer annually one or more
research fellowships for graduate students properly qualified to assist in conducting original research. Holders of these fellowships are permitted to carry on graduate work toward the master's degree. The annual stipend varies from $400 to $600.

Canning Crops Research Fellowship. This fellowship is sponsored by the Utah Canners' Association, the American Can Co., the Anaconda Sales Corp., the American Potash Institute, and the Nitragin Co. It is awarded annually to a graduate student who is qualified to proceed with research work in soil fertility and canning crops investigations. It pays an annual stipend of $600.

Utah Agricultural Marketing Service Fellowship for graduate research in the marketing of fruits and vegetables. This fellowship carries a stipend of $500.

For a graduate student in animal husbandry, a fellowship for research in sheep breeding with an annual stipend of $450 is given. Applications for this fellowship should be sent to the Dean of the School of Agriculture before April 1.

For graduate students in vocational agriculture, two fellowships of $200 each are offered to prospective teachers with outstanding records in scholarship and leadership to do graduate work in preparation for teaching agriculture.

Graduate Division of Social Work

Louisa Y. Robinson National Women's Relief Society Scholarship. A gift of $5,000 has been made to the college by the General Board of the National Women's Relief Society for the purpose of creating a perpetual fund bearing the name of Louisa Y. Robinson, the annual earnings of which are to be given to a Latter-day Saint woman student eligible for admission to the Graduate Division of Social Work. A research paper is required. If the study takes the form of a thesis for a Master's degree including four quarters of residence the award, on the basis of present earnings, is $200. If a less comprehensive study is made which can be completed as a part of regular course work in nine months the award is $150. A transcript of credits and three letters of recommendation are necessary, one of which must be from the ward relief society president of the ward in which the student lives. One hundred dollars is payable May 1, and the rest on completion of the study.

One Graduate Tuition Scholarship of $80 is available to a student meeting the requirements for admission to the Graduate Division of Social Work.
SUMMARY OF ATTENDANCE

Fifty-third

Annual Commencement

LIST OF GRADUATES 1945-46

GRADUATE DIVISION

DOCTOR OF SCIENCE (Honorary)

Jardine, James Tertius
Peterson, William

Graduates with the Degree of Master of Science

Downs, Elvin
Geddes, Ezra Wooley
Janson, Reuel G.
Maddock, Darrell R.
Magleby, Ward H.
Martin, E. La Vern
McDonald, John Elmo

Education
Sociology
Wildlife Management
Entomology
Education
Education
Range Management

Graduate with Certificate in Social Work

Anderson, Naomi Reese

UNDERGRADUATE DIVISION

Graduates with the Degree of Bachelor of Science

SCHOOL OF AGRICULTURE

Anhder, Garth Ivon
Bingham, Eldon B.
Ellison, Don C.
Gillespie, Leo Alex
Grimmer, William L.
Henrie, Alder L.
Huber, James R.
Jensen, Charles William
McMillan, Lavor C.
Meldrum, Lloyd Eugene
Moser, Ross Arthur
Nyman, Farres H.
Roberts, Thayne S.
Samii, F.
Smith, Joseph Marion
Taft, Mack Smith
Taylor, Brian Lake
Thorley, Robert J.
Winder, William C. III

SCHOOL OF ARTS AND SCIENCES

Baird, Carl James
Bergeson, Ramona
Bills, Seth H.
Bilton, Afton
Bryson, Melvin J.
Budge, Barbara Ann
Budge, Reed William
Carlisle, Marian
Carlson, Irene Marie
Chadwick, Carl L.
Christopherson, Virginia
Dare
Embry, Ursel Ralph
Gilmore, Richard Clyde, Jr.
Greaves, Thelma Mae
Harmon, Carlos Bruce
Haskins, George William
Hatch, Lucille
Hendricks, Barbara
Heninger, John H.
Jacobsen, Gayle
James, Wayne William
Johnson, Eula
Johnson, Mardenne
Ludlow, Daniel H.
Mathews, Dasil George
Merrill, Beverly Holmgren
Miller, John Cannon
Moore, Zina Vae
Nielson, Nedra Jean
Paulsen, Gorgas Rush
Payne, Clair L.
Peterson, Charlene
Rath, Ann Elizabeth
Smith, Radia
Telford, Paul Eugene
Tingey, Alice Noreen
Wardle, Orrin D.
Wood, Stephen Lane
Yeaman, C. Rex
Yearsley, Twila Ann
SCHOOL OF COMMERCE

Alder, Conrad C.
Anderson, Robert Louis
Anderson, Zula Bell
Bethers, Grant
Bishop, Blaine
Brough, Owen Lavar, Jr.
Campbell, Melva
Cherrstrom, Ernest Corey
Corbridge, Ivan Lawrence
Doutre, William M.
Duncan, Gail B.
Freeman, Kay E.
Grant, Irma Fae
Hardman, Barbara
Hillyard, H. Randall
Hurst, Barbara Nelson
Hyer, Marjorie
Jackson, Dick L.
Lundahl, Dorothy
Murch, John Allan
Partridge, Beth
Ralphs, Lloyd T.
Reid, Clair Porter
Shaw, Roy Thomas, Jr.
Somers, Lillian
Steffensen, Lila Lee
Toolson, R. Burns
Torgeson, Ruth Marian
Treat, Catherine A.
Wanlass, Lawrence Curtis
Wennergren, E. Earl
Wennergren, J. Faye
Zollinger, Mildred Amelia

SCHOOL OF EDUCATION

Andrew, Dean C.
Belliston, A. Garth
Brown, Evelyn
Carter, Barbara
Carver, Lois F.
Chamberlain, Blanche V.
Christensen, James Arbon
Clay, Bonnie
Cook, Mrs. Annis B.
Cooper, Virginia Louise
Cullimore, Dorothy Elaine
Cullimore, William J. Jr.
Deakin, Mary Cathleen
Dixon, Virginia
Dunford, Nadine
Fleming, Helen H.
Hall, Vaughn LeRoy
Hawkes, Lorin J.
Hawks, Hazel Morris
Heath, Dorothy Leona
Holland, Ross W.
Jones, Donna Rae
Kunzler, Norine
Lewis, Inez W.
Lyman, Rene
Maughan, Ernest Baxter
McKinnon, Kathryn W.
Michaelis, Ruth S.
Morgan, Arlene
Mortensen, Phyllis Helen
Phillips, Gene
Pugmire, Ila Mae
Putnik, John George
Rampton, Ralph Junior
Rasmussen, Barbara
Rose, Olive Loretta
Sanders, Glenn August
Saunders, Mrs. Nedra J.
Schoessler, Marie Dorothy
Schow, Iris W.
Smith, Irene
Smith, Maxine M.
Sorensen, Sadie May
Taylor, Wayne Gibson
Thorley, Beatrice G.
Watt, George D.
Wilson, Mary D.

SCHOOL OF ENGINEERING, INDUSTRIES AND TRADES

Civil Engineering

Chatterley, Jay L.
Demetras, George D.
Haws, Frank W.
Jibson, Wallace N.

Industrial Division

Edgel, Lewis George
Elkins, Robert Davis
Johnson, Max Theodore
Larsen, Edward Christian
Stettler, Elmer E.
Sorensen, Alton C.
Wilhelmsen, Mack

SCHOOL OF FOREST, RANGE AND WILDLIFE MANAGEMENT

Hearrell, Dave C., Jr.
Maycock, Clyde Palfreyman
Roberts, Kenneth Dixon
Stevens, Rollin R.
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### SUMMARY OF ATTENDANCE

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September 24, 1945 to June 7, 1946

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