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# UTAH STATE UNIVERSITY

## LOGAN

### *Resident Colleges*

University College  
College of Agriculture  
College of Business and Social Sciences  
College of Education  
College of Engineering  
College of Forest,  
Range and Wildlife Management  
College of Home and Family Living  
School of Graduate Studies

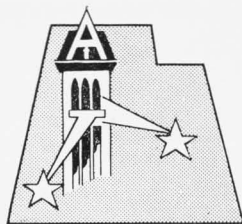
### *Branch Colleges*

College of Southern Utah, Cedar City  
Snow College, Ephraim

1958-59  
CATALOG



# UTAH STATE



# UNIVERSITY

## *Utah's State-wide University*

Your Utah State University includes:

- *Seven Resident Colleges*
- *Two Branch Colleges*
- *School of Graduate Studies*
- *Summer School*

- *Division of Off-Campus Education*

With 1100 Home Study Students; 1200 other Off-Campus Students at 36 Resident Centers; State-wide Adult Education Services.

- *Utah Cooperative Extension Service*

With 11,000 4-H Club Boys and Girls; 64 County Agricultural and Home Agents, with offices in 26 counties.

- *Research Programs*

Utah Agricultural Experiment Station; Engineering Experiment Station; Division of University Research; Several Affiliated Research Organizations.

- *Degrees and Certificates Granted*

IN TWO-YEAR PROGRAMS: Associate in Arts; Associate in Sciences; Certificate of Completion.

IN FOUR-YEAR PROGRAMS: Bachelor of Science.

IN FIVE-YEAR-OR-MORE PROGRAMS: Civil Engineer; Irrigation Engineer; Master of Forestry; Master of Education; Master of Science; Doctor of Education; Doctor of Philosophy.

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Volume 58

BULLETIN

Number 4

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JS-8M

# UTAH STATE UNIVERSITY

*Serving You and Utah*

Founded at Logan in 1888



1958-59  
Catalog

# University Calendar, 1958-59

## Fall Quarter

**September 17, Wednesday**  
General staff meeting for University and its Branches  
**September 22, Monday**  
University faculty meeting  
**September 24, Wednesday**  
Guidance tests for all new students not previously tested  
**September 25, 27, Thursday, Saturday**  
Orientation for all new students  
**September 26, Friday**  
Registration for new students  
**September 27, Saturday**  
Registration for former students  
**September 29, Monday**  
Class instruction begins

**September 30, Tuesday**  
Late registration fee effective  
**October 17, Friday**  
Last day for adding courses or changing sections  
**October 25, Saturday**  
Homecoming  
**November 14, Friday**  
Last day for dropping courses (7th week)  
**November 27, 28, Thursday and Friday**  
Thanksgiving recess  
**December 15-18, Monday-Thursday**  
Final examination week  
**December 18, Thursday**  
Fall quarter closes

## Winter Quarter

**January 2, Friday**  
Orientation for all new students  
**January 2-3, Friday and Saturday**  
Registration for all students  
**January 5, Monday**  
Class instruction begins  
**January 6, Tuesday**  
Late registration fee effective

**January 23, Friday**  
Last day for adding courses  
**February 20, Friday**  
Last day for dropping courses  
**March 16-19, Monday-Thursday**  
Final examination week  
**March 19, Thursday**  
Winter quarter closes

## Spring Quarter

**March 23, Monday**  
Registration for all students  
**March 24, Tuesday**  
Class instruction begins  
**March 25, Wednesday**  
Late registration fee effective  
**April 10, Friday**  
Last day for adding courses or changing sections

**May 8, Friday**  
Last day for dropping courses  
**June 1-4, Monday-Thursday**  
Final examination week  
**June 5, Friday**  
Spring quarter closes  
**June 5, Friday**  
Baccalaureate  
**June 6, Saturday**  
Commencement exercises

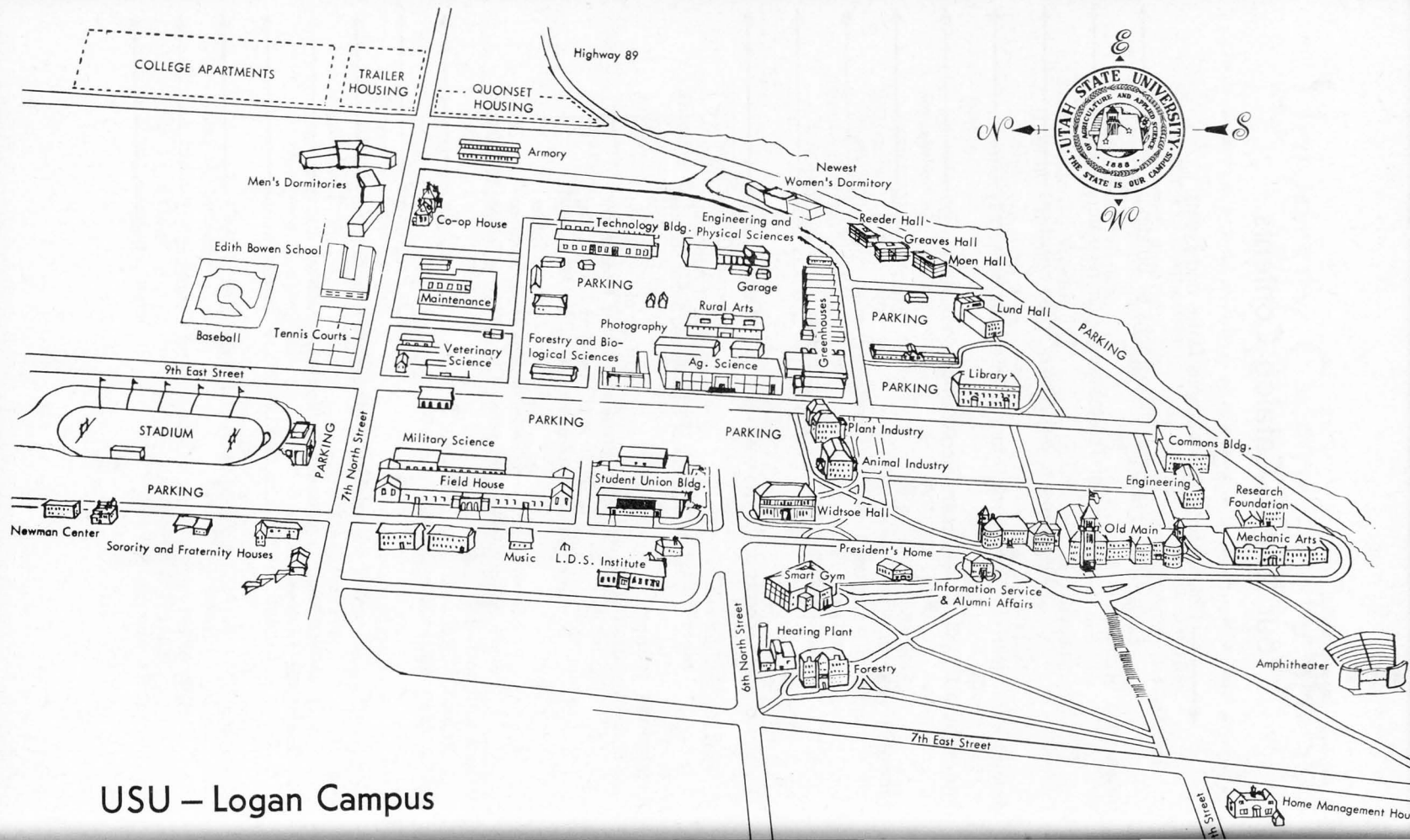
## Summer Quarter (1959)

**June 15, Monday**  
First session begins  
**July 17, Friday**  
First session closes

**July 20, Monday**  
Second session begins  
**August 21, Friday**  
Second session closes

# Your Key to Catalog Contents

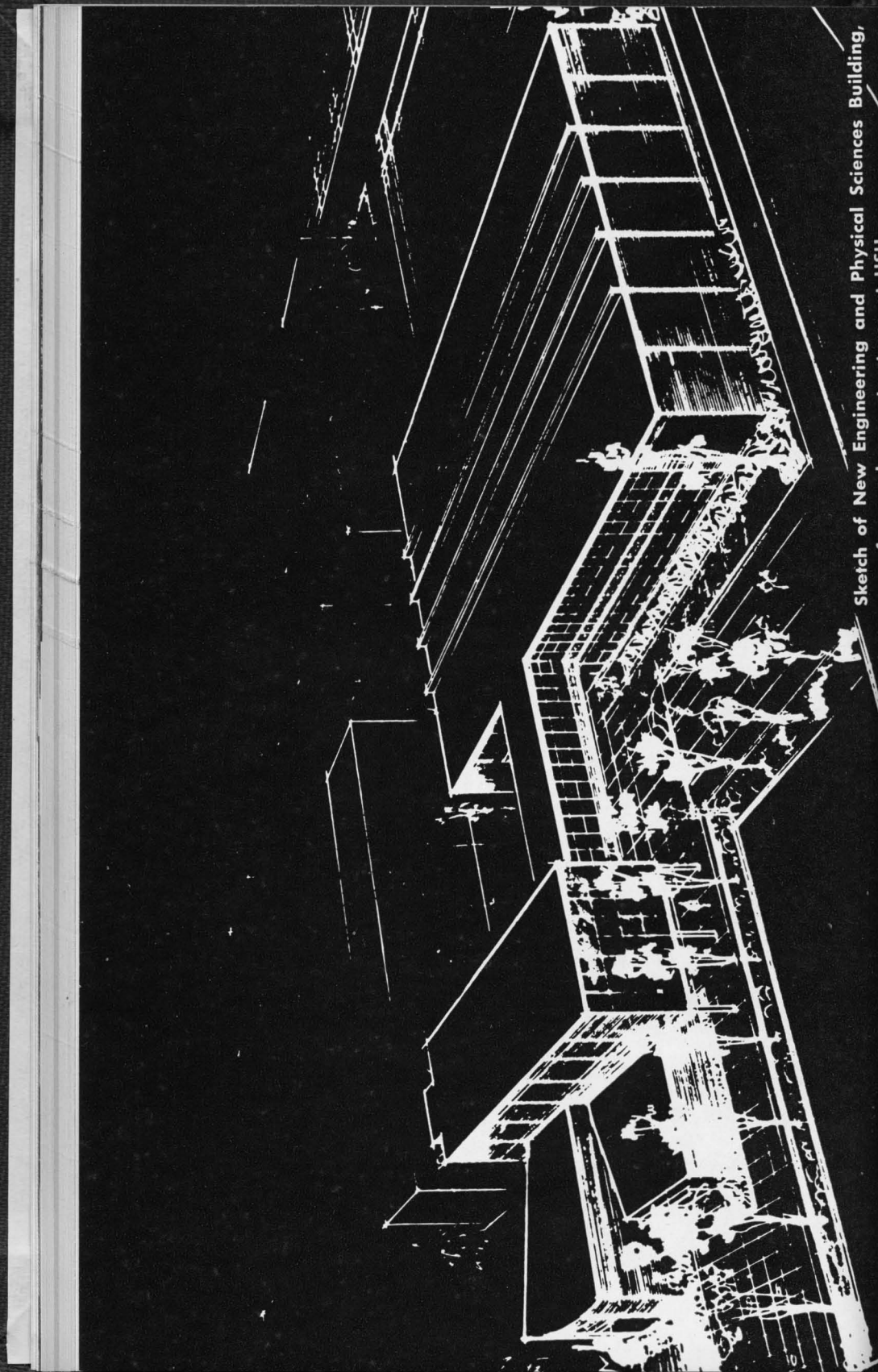
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USU – Logan Campus





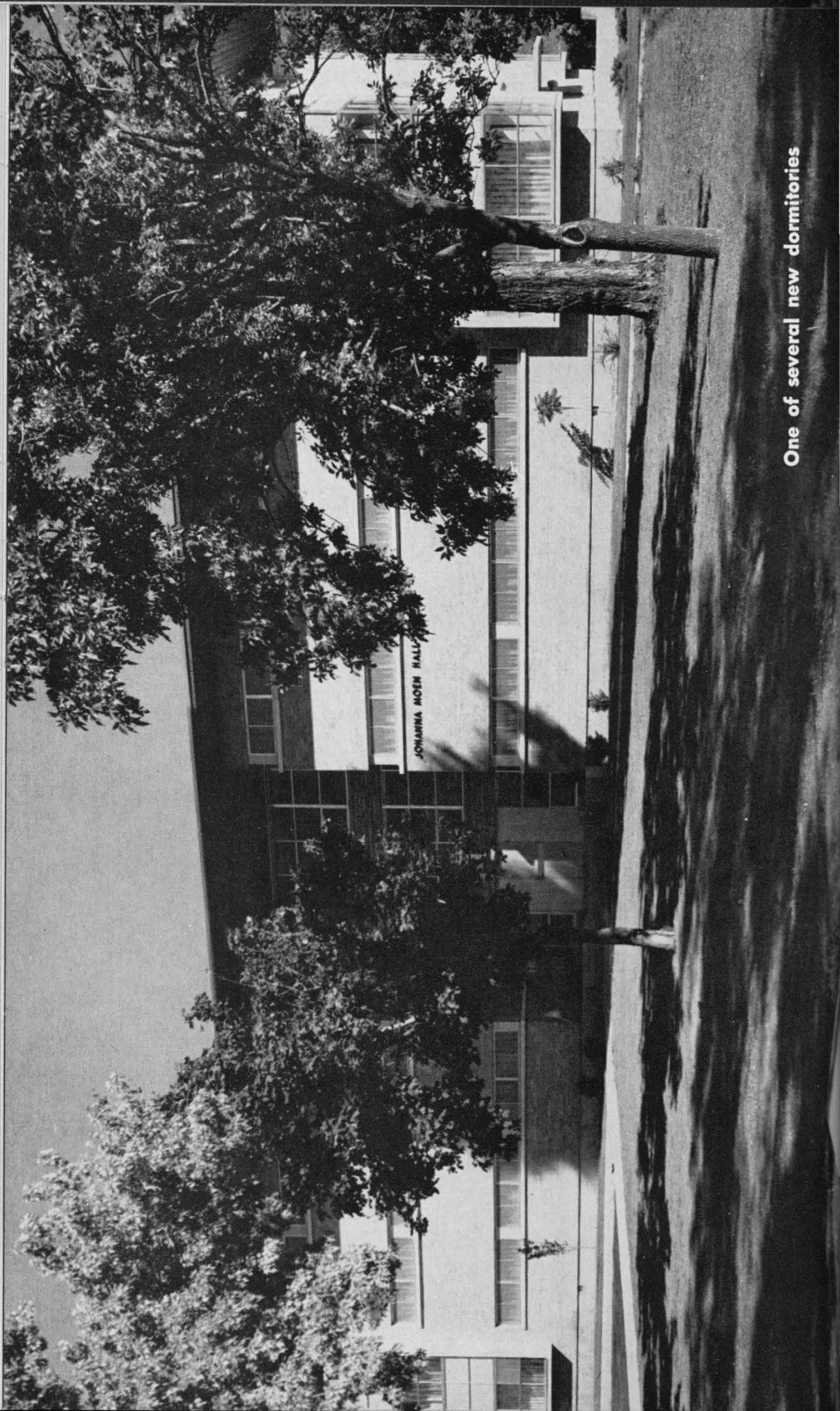


Sketch of New Engineering and Physical Sciences Building,  
one of several new structures at USC



Student Union Building



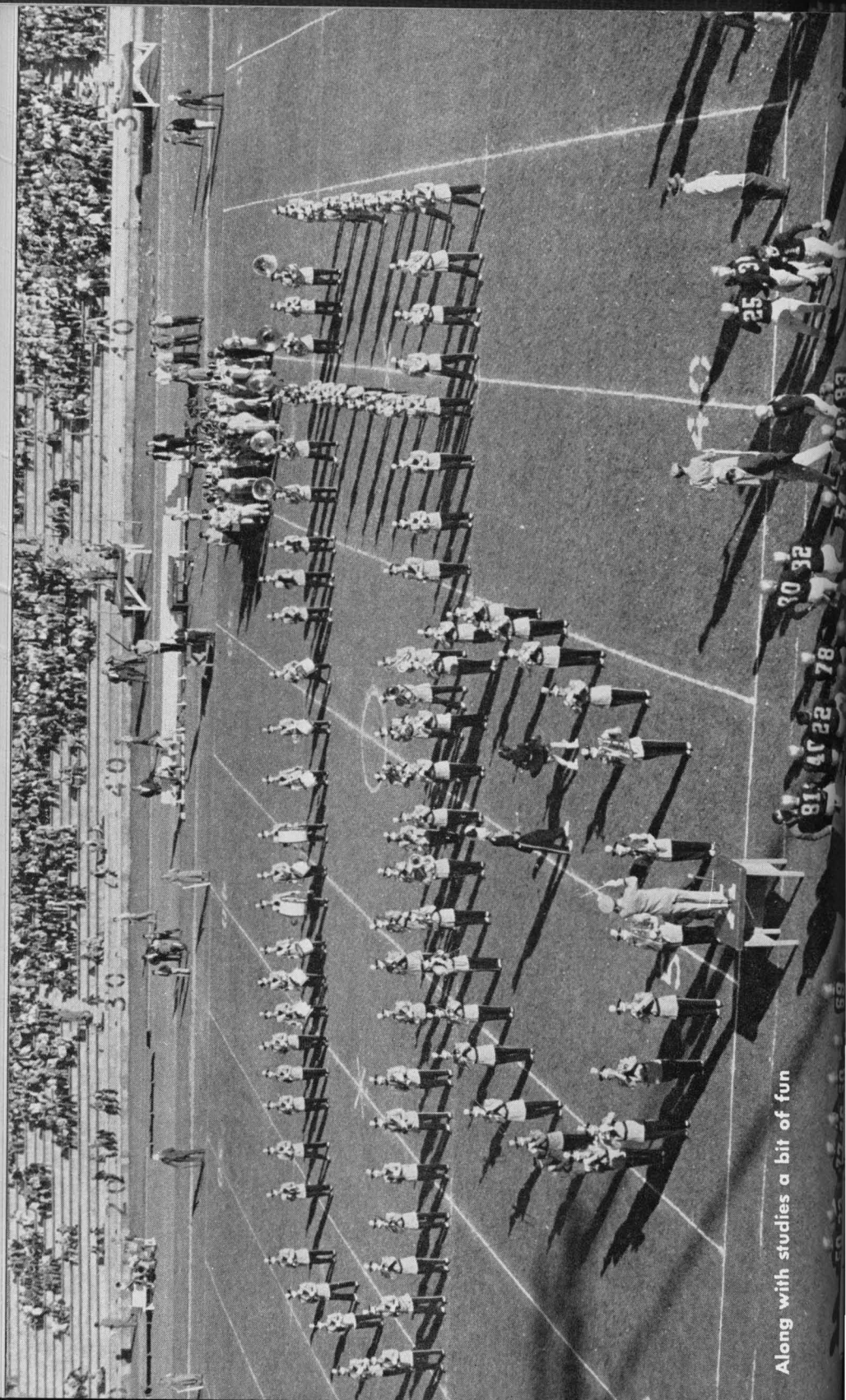


One of several new dormitories

A black and white photograph of a large, multi-story brick building, likely a church or school, featuring a prominent steeple and a tall chimney. The building is surrounded by lush trees and a well-maintained lawn. In the foreground, there is a paved area with a few people walking. The overall scene is peaceful and educational.

Religious Training is a vital part of Education at USU

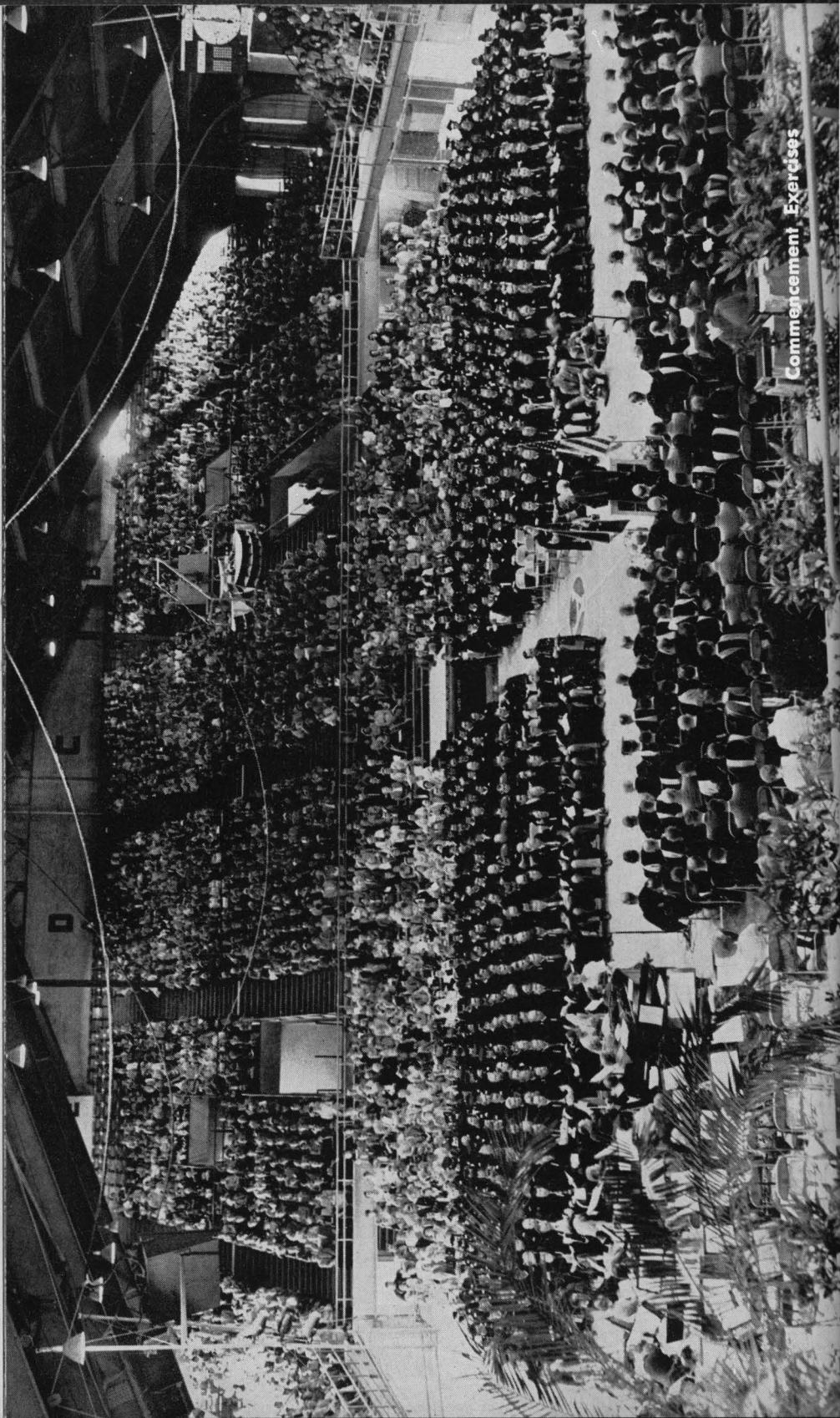




Along with studies a bit of fun



Homecoming is one of several big campus events





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 WOMEN'S ACTIVITIES COUNSELOR Hazel M. Johnson  
 MANAGER AND COORDINATOR, HOUSING W. W. Skidmore

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## History and Political Science

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## Horticulture

Office: Agricultural Science 204-B

## Household Administration

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## Industrial and Technical Education

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Aeronautics Office: Technology 2

Automotive Office: Technology 1

Welding Office: Mechanic Arts 115

## Languages

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## \*Liberal Studies

Office: Library 306

## \*Library Science

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## Mathematics

Office: Main 126

## Mechanical Engineering

Office: Engineering 203

## Military Science and Tactics

Office: Military Science 101

## Physics

Office: Widtsoe Hall 101

## Poultry Husbandry

Office: Animal Husbandry 201

## Psychology

Office: Main 175

## Range Management

Office: Forestry 306

## Sociology

Office: Main 212

## Speech

Office: Main 123

## Tool Engineering

Office: Mechanic Arts 101

## Veterinary Science

Office: Veterinary Science Building

## Wildlife Management

Office: Forestry 302-B

## Zoology

Office: Main 231

\*Not actually a department.

# Utah State University

Utah's State-wide University



**President Daryl Chase**

*History and Organization.* Utah State University and its two branch colleges belong to that great family of educational institutions known as Land-Grant Universities. Each state has at least one of these collegiate institutions that had their origin in 1862 when Abraham Lincoln signed the Morrill bill. This bill provided for establishment of Land-Grant institutions by the grant of federal lands for their material support.

Utah State University operates under the constitution and laws of Utah, under which it and its Agricultural Experiment Station were established in 1888 as a part of the public educational system of the state.

*The Federal Land-Grant Act* provides that the institutions in the system are "without excluding other scientific and classical studies, including military science and 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 prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

These Land-Grant institutions are characterized by the philosophy that through applied education most of the ills of mankind can be eliminated. In part, they had their origins in a protest made against the narrow curriculum found in the colleges and universities of a hundred years ago. A visitor to a Land-Grant institution is impressed by the breadth of its academic offerings and the high quality of its teaching and research. Land-Grant institutions have been given special assignments to study problems connected with water, soil, plant and animal life. There was little human progress until man began mastering the physical world around him and improved, through the science of plant and animal breeding, the species of life about him and brought new improved varieties into existence. Rivers, weeds, pests, floods, diseases, or deserts have little interest in the welfare of man. Some elements in nature man must control, improve and adapt to his needs. Others he must destroy or they will destroy him.

*Teachers and researchers* at Land-Grant institutions labor in the fields of physical and biological sciences, but not to the neglect of others. Remember, the original legislation creating these institutions



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stated that the Federal grants of land were for the establishment of collegiate institutions where at low cost a "liberal" as well as a "practical" education might be obtained by the sons and daughters of the "industrial classes in the several pursuits and professions of life."

The Utah Territorial Act of 1888 confirmed these purposes for the Institution and defined the offerings of the University to include: "The English language and literature, mathematics, civil engineering, agricultural chemistry, animal and vegetable anatomy, physiology and 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 to practical agriculture in the field."

Utah State University, from its origin in 1888, has been faithful to its Federal and State charters in providing the practical and applied aspects of the physical and biological sciences, social sciences, the humanities, and the arts. Utahns have wanted their sons and daughters skilled in the sciences of making a living, but not at the expense of the creative arts which enrich life with meaning and beauty. A student at Utah State University may study agriculture in all of its many branches. He may also study art and music and literature. He may study forestry or floriculture, business or political science, engineering or English. He may study the origin of streptomycin, which was discovered at a Land-Grant College, or he may choose to play an instrument in the University symphony orchestra. A mother may enter her three-year-old child in the nursery school. At the same time the father

may be completing his studies for the Doctor of Philosophy Degree.

*A Land-grant university is characterized by its broad curriculum, its democracy and by its basic structure. It rests upon a firm educational tripod of teaching, research and extension. Utah State University is not a single-service educational institution, nor is it an aggregate of several individual schools or colleges. It is an institution of higher learning which provides technical, scientific and professional training. It is an agency offering scores of refresher short courses to thousands of Utahns daily engaged in the arts of home-making and sciences of making a living. It is a multi-service university preparing people for the several pursuits and professions of life.*

A progressive and dynamic industry must frequently re-tool and constantly study its markets. Schools should frequently make self-evaluation studies of their organization and educational objectives. Pruning and replanting are essential in institutions of higher learning as well as on the farm. Colleges and universities, like government itself, tend toward unnecessary proliferation in organization and programs. Vested interests costly to the State take root on campuses as well as at centers of government.

The University, following a critical post-war, self-directed study, underwent important and basic reorganization in order that it might better serve the State in its three major assignments.

*With the welfare of students and the general public in mind, significant changes have been effected recently at Utah State University through the cooperative action of the Board of Trustees, the administration, and the faculty. Mounting*

evidence presented by graduates of recent years made apparent this fact: that the institution should be officially recognized for what it has been for a long time, namely, a full-fledged university. Therefore, what was originally (1888) known as Agricultural College of Utah, later (1929) as Utah State Agricultural College, became Utah State University on its sixty-ninth birthday (March 8, 1957). Utah State now consists of seven resident colleges, a graduate school, and two branch colleges—Snow College at Ephraim, and the College of Southern Utah at Cedar City.

*Foreign Technical Assistance.* The international influence of USU has best been demonstrated through its program with the government of Iran. The University has a contract with the International Cooperation Adm., which functions under the U. S. State Department, to render technical assistance to the people of Iran in the fields of plant science, agricultural engineering, animal science and agricultural extension work. In addition the University serves in an advisory capacity to Karadj Agricultural College to aid in its program of services to the agricultural interests of Iran. One of our administrators also serves as a member of the Board of Regents of the American University at Beirut. The University has supplied two dozen technicians to work in Iran.

USU students from foreign lands are being trained for leadership positions in their respective countries, in agriculture, engineering, drainage and farm mechanics, humanities, social sciences, natural and physical sciences, business administration and education.

A fourteen-member Board of Trustees is the governing body of

the University. Twelve of these members are appointed by the Governor and ratified by the State Senate. Two others serve as ex-officio members: These are the Secretary of State and the President of the University Alumni Assn. The Board appoints a Secretary. All Board members serve free gratis.

*Chief executive officer of the University is the President.* The Dean of Academic Administration, the Business Manager - Treasurer, and the members of the Administrative Council form the President's "Cabinet."

*The current President, Dr. Daryl Chase*, who was appointed in 1954, is the tenth person to hold the office. Following President J. W. Sanborn in 1894 was J. H. Paul. Succeeding executives of the Institution were J. M. Tanner, 1896; W. J. Kerr, 1900; John A. Widtsoe, 1907; E. G. Peterson, 1916; Franklin S. Harris, 1945; Louis L. Madsen, 1950, and Henry Aldous Dixon, 1953.

*Accreditation.* The University and all its departments are fully accredited. The University is accredited by the Northwest Association of Secondary and Higher Schools and is on the accepted list of the Association of American Universities and of the American Association of University Women. The University is a member of the American Council on Education and also is listed by other accrediting agencies.

The College of Education is a member of American Association of Colleges for Teacher Education and is accredited by the National Council for Accreditation of Teacher Education.

College of Engineering is ac-

## 10 Utah State University

credited by the American Society for Engineering Education, and its departments of Electrical, Agricultural and Civil Engineering are accredited by the Engineering Council for Professional Development.

College of Forest, Range and Wildlife Management is accredited

by the Society of American Foresters and shares the University accreditation.

The University College shares in the accreditation of the University, and in addition its department of Chemistry is accredited by the American Chemical Society.

## Major Faculty Committees, 1958

### *Committee on Professional Relationships and Faculty Welfare:*

V. L. Israelsen, CHAIRMAN; Melvin Cannon, VICE CHAIRMAN; Ina Doty, SECRETARY; *Three-year members:* W. H. Bennett, Milton Abrams, Florence Gilmore, A. Alvin Bishop; *Two-year members:* Melvin Cannon, Vernon L. Israelsen, Leonard H. Pollard, Sterling Taylor; *One-year members:* Anson B. Call, Eldon J. Gardner, Burrell

F. Hansen, Allen W. Stokes. President Daryl Chase and President of Faculty Association, *Ex-officio members.*

### *Curriculum Committee:*

John C. Carlisle, CHAIRMAN; L. Mark Neuberger, Howard B. Peterson, R. Welling Roskelley, Milton Abrams, David R. Stone, William L. Jones, Raymond Moore, Florence Gilmore, Neville Hunsaker, King Hendricks, and student representatives.

*Everyone has a public duty in proportion to the education he has received.*

# Admission

## Entrance Requirements

Your admission to Utah State University is granted upon the basis of an official application which includes transcripts of credit from schools previously attended. The Uniform Application for Admission to Utah Collegiate Institutions may be obtained upon request from any Utah high school principal, or from the Admissions Office of USU. All credentials should be submitted at least thirty days prior to the official registration date of the quarter in which enrollment is anticipated. Late presentation of credentials will cause inconvenience and delay in registration.

If you register late as a result of late application you are subject to the late registration fee.

*The standard minimum requirement* for admission to any college of the University is graduation from an approved high school in the United States or equivalent training in a country whose educational systems differ from that in the United States. Some colleges of the University, however, have special requirements for admission. Further details with reference to admission to individual colleges or programs may be found in the section of this catalog devoted to the college which offers the training desired.

*If you have not been graduated from high school* you may be admitted by presenting satisfactory evidence of ability to do university work. This evidence may be demonstrated by presentation of an official transcript showing collegiate work previously taken as an unmatriculated student, or by examination taken in advance of reg-

istration. Such examinations as College Board Entrance Examinations, Scholastic College Aptitude Test, or other approved standardized tests which provide appropriate appraisal of scholastic abilities of the applicant shall be accepted for fulfilling this requirement.

The following suggestions emphasize the desirability of including various studies in your high school program if you plan to enter the University:

(1) *English*. Inasmuch as the ability to write clearly and to read with understanding and appreciation is essential, it is highly desirable that you 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. If you are planning to specialize in the sciences or in engineering you 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.

(4) *Natural Sciences*. This field is rich in possibilities for understanding the modern world. Two units in science might well be completed. If you plan to emphasize science or engineering in college, three units are helpful.

(5) *Foreign Languages*. As a

prospective University student you might 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) *Fine Arts*. This field offers opportunity for development in an 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 if you are planning to attend the University. Such subjects, when properly studied, contribute materially to the educational growth of the individual and prepare him for continued study as well as for more general activities of living.

If you expect to become a candidate for any degree or diploma from any of the colleges of the University you must include among the units presented those preparatory courses specified as prerequisite to beginning University courses in the various fields. You are urged to give serious thought to the selection of a major field of interest. In this regard, you, in cooperation with your parents, high school principal or other school adviser, should plan the high school program so as to meet the specific requirements for admission. If you fail to do this you may be delayed in starting your University work until the prerequisite courses are made up. Not all of the colleges and departments of the University have specified prerequisites, but those which do have list them in their college and departmental sections in this catalog.

*Transfers from Other Collegiate Institutions (Advanced Standing)*. The University does not grant collegiate credit for excess high school work. Advanced standing for work of satisfactory grade done in some other accredited institution may be granted provided you present satisfactory evidence that the work offered is equivalent to the work for which you wish it to be substituted.

Transcripts submitted for evaluation become the property of the University, and are not returned.

## 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 and Upper Division rank; and 136 credits for Senior rank. These figures include the required credits in Physical Education, Military Science, or Air Science.

*Registration*: On each registration day, you are permitted to register according to an alphabetical schedule to be announced later.

In case you cannot call for your registration materials at the hour scheduled for their release, you may receive them at a later hour. But in fairness to other students, registration materials cannot be released earlier than the time scheduled. Observance of this fact and respect for the rights of others



will greatly facilitate registration procedures for all concerned.

Registration is not complete until you have presented your fee card at the cashier's window, office of the Controller, and have paid your fees and filed your registration cards with the Registrar's office. You will not receive credit for resident work unless you are officially registered for the specific courses involved.

The program of courses listed on your registration card, approved by your dean and filed in the Registrar's office, is considered to be your official registration for the quarter. You are held responsible for the satisfactory completion of the entire program. Unless an official change-of-registration form is filed with the Registrar's office, an "F" grade will be recorded in case of failure to obtain a passing grade or an incomplete in any course for which you are registered, regardless of the reason for the failure.

*Penalties for Late Registration and Late Registration Fee:* \$5 beginning the second day after specified Registration Days; additional \$1 for each additional day, up to a maximum of \$10.

The amount of work for which you are allowed to register will be reduced by one and one-half credits for each week, or fraction thereof, that you are late in registering.

*Changes in Registration:* Any change in original registration, deletions or additions, must be recorded and appropriately approved on the official change-of-registration form.

During the first three weeks of any academic quarter, you may change your registration on your own initiative, add or drop classes, by obtaining the approval of your

teacher concerned, your faculty adviser, and the dean of your college, so indicated by their signatures on the change-of-registration form. *Thereafter, through the seventh week only, courses may be dropped from but not added to the study list. Withdrawal from a class at this time is permitted only because of circumstances beyond your control.*

*The dean of the college in which you are registered considers each case on its merits. The signature of approval from the dean, in addition to the signatures of the instructor and the adviser, must appear on the change-of registration form before it is accepted at the Registrar's office.*

In the event you register for a class which is later cancelled, it is the responsibility of the teacher to notify the Registrar's office and to return the class roll cards to the Registrar's office so that you can be properly withdrawn from the class.

*Change-of-Registration Fee:* No charge for the first five school days after regular registration days. \$1 for each class change made thereafter.

*Procedure for Withdrawal from the University.* If for any reason you find it necessary to leave the campus before the end of the quarter, you should take the necessary steps to withdraw from the Institution officially. The procedures to be followed in completely withdrawing from the University are as follows: (1) Call at the Registrar's office for the necessary blank forms. (2) Complete forms as required and discuss problems relating to withdrawal with those whose signatures are to be obtained in the order designated for appropriate clearance. (3) Obtain from

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each instructor the class enrollment cards and present these and the withdrawal forms at the Registrar's office. (4) Obtain clearance from Registrar's office for any refunds which may be warranted. (5) Present processed withdrawal notice and Activity Card to the Cashier for refunds and/or for official, complete withdrawal.

Unless you are doing passing work in all of your classes at the time of withdrawal you may be denied the privilege of canceling your registration. In case you leave the campus without obtaining permission for cancellation of registration, "F" grades will be recorded if sufficient work has not been completed to warrant the reporting of passing grades.

*Visitor's Permit:* If you wish to attend regularly any class for which you are not registered you must obtain a visitor's permit from the Registrar's office. No credit will be allowed for such attendance. A fee of \$10 per class is charged for the privilege of auditing. Visitor's permit forms may be obtained from the Registrar's office. These forms include an authorization to the instructor for admitting you to the class. These forms, properly executed, must be submitted to the Registrar's office before attendance at a class is permitted.

*Importance of Submitting Forms to the Registrar's Office:* The special change-of-registration form, properly executed, must be filed at the Registrar's office before any change becomes effective. Withdrawal from a class without adhering to the regulations specified above and before the deadline makes it mandatory upon the instructor and the Registrar to record an "F" grade. Attendance at classes without proper approval

and without official registration as defined above, and before the deadline as specified above, will result in forfeiture of any credit for such attendance.

*Responsibility of Instructors:* Instructors are charged with the responsibility of denying you the privilege of attending classes if you have not complied with regulations for admission to classes.

*Normal Registration:* Fifteen credits, exclusive of one credit in basic Military Science, Air Science, or Physical Education, is the normal registration for any one quarter.

*Maximum Registration* without approval for excess credit is set at seventeen quarter hours exclusive of one credit in basic Military Science, Air Science, or Physical Education. Only the dean of the college in which you are registering has authority to approve registration in excess of this maximum. You are not allowed to register for less credit than that listed for a course in order to bring the total registration within the maximum limit as herein defined. The registration is construed to include any extension, correspondence, institute, or other work carried by you for credit, or for removal of high school deficiencies, during the period of the school year.

*Minimum Registration:* The minimum registration for a full-time student load is usually considered to be twelve credit hours. To be eligible for student body offices you are required to be registered for twelve quarter hours or more. Veterans are required to be registered for fourteen quarter hours or more to qualify for full subsistence. Students deferred by the Selective Service system under 1 SC status are required to main-

tain an average of fifteen credits per quarter.

*Incomplete Work:* You are required to complete by the end of the quarter all courses for which you have registered. This includes correspondence courses for which you may be registered on the residence registration fees. Incomplete grades can be granted by an instructor only when permission is granted by the dean before the close of the quarter. The necessary petition form 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.

*Low Scholarship and Probation:*

If you have not maintained an average grade of "C" or better, or if you are failing to obtain passing grades in twelve or more credits during the preceding quarter, you are automatically placed in the low scholarship group. No person in the low scholarship group shall be eligible to be elected, appointed, or to 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 the probation are subject to immediate suspension from the University. When in doubt regarding any of the regulations affecting them, students on probation should consult with the dean of the college to which they belong. The dean alone has authority to waive or modify terms of probation. Students in the low scholarship group may not register for more than 15 credits per quarter exclusive of one hour of Physical Education, Military Science, or Air Science.

*Credit by Examination:* In special cases, you may be permitted to obtain university credit by passing examinations in subjects not taken in course. Credit for a subject taken in course for which a grade other than passing has been received cannot be acquired by means of special examination. This privilege does not permit 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 information and training gained from practical experience that may be considered the equivalent of the experience and training received by students in an organized course given in the University.

A maximum of 18 quarter hours' credit can be acquired by special examination. None of the last 30 credits presented for a Bachelor of Science degree may be obtained in this manner. Unless the examination is taken prior to the close of the second week of any quarter for which you enroll, the credits gained will be included as part of your load for the quarter. Credits earned by special examination cannot be used for satisfying the requirements for a graduate degree nor for certification.

Request for permission to take special examinations should be made to the Registrar's office.

You may earn as much credit by home study courses in the two-week Christmas holiday period as in a similar period in residence, without having it added to your load the preceding or following quarter.



## Lower Division

The Lower Division 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 prepare you for the major work upon which you will concentrate in the Upper Division.

Provision is made in several departments for the issuance of Certificates of Completion for two years of work as prescribed by these departments.

If you expect to become a candidate for the Bachelor of Science degree you should plan your courses with great care through consultation with your faculty advisers, major professor, and dean, to assure the best choice of courses for filling the groups and to provide the proper foundation for advanced work. Failure to do this may necessitate an extra year to complete the work for the desired degree.

To complete the work of the Lower Division you should satisfy the following requirements:

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

(2) Complete 96 credits (quarter hours) of work (including Military Science, Air Science, or Physical Education) with an average of "C" or higher.

(3) Prepare a foundation of at least 15 credits for the field of specialized study in the Upper Division.

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

### (A.) *English Composition.*

(1) A placement examination in English is required of all freshmen.

(2) Beginning freshmen are required to take Basic Communication 1 and to continue through Basic Communication 2 and 3. Students who enter with transfer credits should consult with the English Department concerning the Basic Communication course that they may be required to take.

Note: For graduation all students must present nine hours in Basic Communication or its equivalent. See Paragraph 6 under "Summary of Requirements for Graduation."

(B) *Group Requirements.* 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.* This group requirement may be satisfied by taking any one of the following combinations of courses:

(a) Biology 1 and either 5 hours of lower division Bacteriology or Physiology 4.

(b) When more technical courses are required they may be used to satisfy this group requirement if taken in any of the following sequences:

(1) Botany 24 and 25.

(2) Zoology 3 and 4.

(3) Any two of the following three series:

(a) Bacteriology 10 or 70 and 71; (b) Botany 24 or 25; (c) Zoology 3.

If you already have a satisfactory knowledge of general biology, as demonstrated by examination, you may satisfy this group requirement

by taking Bacteriology 10 or 70 and 71 and Physiology 4.

(2) *Exact Science.*

Chemistry—any course of Lower Division grade.

Geology 1 or 3, 4.

Physical Science 31, 32, 33 (Complete sequence required for credit.)

Mathematics—any course of Lower Division grade.

Physics—any course of Lower Division grade.

(3) *Language and Arts.*

Visual Arts 1, 11; Music 1, 25 or 26, 27 or 28, 33.

English—any literature course of Lower Division grade. Upper Division literature courses may also be used for group-filling purposes if instructor of a desired course approves enrollment.

Landscape Architecture 3.

Language—any beginning course in French, German, Portuguese, Spanish or Latin. (A minimum of 14 credits must be earned in a beginning course in language before credit is applied toward graduation.)

Music 1, 80, 81, 90.

Speech—any course of Lower Division grade.

(4) *Social Science.*

Agricultural Economics 53.

Economics 51, 52.

History—any course of Lower Division grade.

Psychology 53.

Political Science 1, 10, 70.

Sociology 10, 70.

Majors in departments in the University College should see the introduction to the University College section of this catalog for suggested courses with which to fill group requirements.

Students in divisions that prescribe the curriculum for a full four-year course (as Forestry, Agricultural Education, and Engineering) are exempt from group requirements listed above. If you transfer from one of these divisions, you are responsible for fulfilling all of the course requirements of the new division.

(C) *Physical Education.* Six quarters of work in Physical Education activity classes are required of all women students. All men students are required to take six quarters of work in Military Science, Air Science, or Physical Education.

## Upper Division

Sixty credit hours of upper division work are required for graduation. The completion of the group requirements in any accredited collegiate institution having a similar pattern of general education will substitute for the completion of the group requirements at this institution, as prescribed in the section *Lower Division* above. This does not apply to students who have been pursuing prescribed courses which do not include the group requirements. If you change from a prescribed course to a major

under the group elective system you must complete the basic group requirements as specified in the section on the *Lower Division*. Transfer students who continue in a prescribed course will be held for the completion of the *Lower Division* courses as prescribed at USU, except as equivalent courses may be accepted as substitutes for our own courses.

*Major Subject.* You should select a major subject upon entering the University or early the first year, but not later than entrance

in the Upper Division. As soon as the major subject has been selected, you should consult the head of the department in which you have decided to major. The head of the department will thereafter act as your adviser. Your registration in each succeeding quarter should be carefully checked and approved by your adviser (called the major professor) in order to assure proper selection and sequence of courses for satisfying institutional and departmental requirements.

Your 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 Lower Division requirements in any of the groups). Your major department and the dean of your college shall also prescribe such other related courses as may be considered desirable, provided always that your free electives may not be reduced below 36 credits.

Special consideration is granted students who pursue prescribed

pre-medical, pre-dental, pre-veterinary, pre-osteopathy, pre-legal, and child development programs for three years at this University. If you pursue further prescribed work in one of these fields for an additional year at an approved institution, you may be granted a Bachelor of Science degree by this University. You need not comply with general major-minor requirements as previously outlined.

*Minor Subjects.* You are permitted to choose your own minor. The minor consists of 18 credits either in one department or in two departments closely related in subject matter, provided that minor in more than one department must have the approval of the dean and the major professor.

Courses used to satisfy the English composition, the basic groups, Military Science, Air Science, or Physical Education, and freshmen orientation requirements as specified under the Lower Division, cannot be counted in the minimum 30 credits for a major or 18 credits for a minor.

## Graduate Work

(See School of Graduate Studies)

## Graduation

*The University offers Certificates of Completion* for two years of study in certain departments; the degrees of Bachelor of Science, Master of Science, Master of Education, Master of Forestry, Civil Engineer, Irrigation Engineer, Doctor of Education, and Doctor of Philosophy; and gives work to fulfill the requirements for all professional certificates issued by the State Board of Public Instruction.

*The University reserves the right to change* at any time the require-

ments for graduation, and as a candidate for a certificate, a diploma, or a degree, you are held to compliance with such changes, so far as the uncompleted part of your course is affected.

You are expected to familiarize yourself with institutional rules and regulations. The responsibility for satisfying the requirements for graduation rests upon you.

*If you do not graduate in the class with which you enter you are held to the requirements, including*

*entrance, of the class with which you do graduate.*

## **Two-Year Certificate**

The University College and the Colleges of Agriculture, Home and Family Living, Engineering, and Business and Social Sciences offer two-year courses in practical studies leading to a certificate of completion for those who are not interested in the regular four-year course leading to the B.S. degree.

In most cases the courses are arranged so that you 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 science underlying these fields and to lay the foundations for good citizenship, they offer a considerable range of selection of practical courses in both the Lower and Upper Division.

To qualify for a Certificate you must:

- (1) Satisfy the entrance requirements.

- (2) Complete 96 credits, including the required work in Physical Education, Military Science, or Air Science.

- (3) Complete a major of 30 credits in one or more closely related departments of the college in which the Certificate is granted.

- (4) Complete a minor of 15 credits closely related or basic to the major subject. This need not be in the same college.

- (5) Complete 24 credits in the basic groups, as follows: Language, nine, which must include English 10; Exact Science, five; Biological Science, five; and Social Science, five.

- (6) Complete 21 credits of elective work.

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

In the College of Engineering and Technology, definite programs of study are prescribed leading to Certificates of Completion within definite fields of applied industrial work. These curricula may be found in the catalog section on College of Engineering.

## **Bachelor of Science Degree**

The University confers the degree of Bachelor of Science upon students who meet the specified requirements of any of the seven resident colleges.

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

If you are planning to graduate at the next Commencement you should consult your major professor and jointly prepare the "Admission to Candidacy" form not later than the fourth week of the fall quarter. You are 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 at the next commencement, the following additional requirements must be met after the requirements-for-admission have been satisfied. Responsibility for satisfying the requirements for graduation rests upon you.

(1) For women, six quarters of work in Physical Education, provided that candidates officially excused from Physical Education present one credit of other work for each quarter that they have been excused.

(2) Men must complete six quarters of either Physical Education, Military Science or Air Science. If exempt from Air Science, Military Science and Physical Education, you must present one credit of other work for each quarter you have been exempt.

The advanced ROTC course consists of the third and fourth year of Air Science or Military Science. Entrance upon the advanced course is elective, but once entered upon, the course becomes a prerequisite for graduation, unless you are discharged in accordance with the provisions of Army Regulation 145-350 or Air Force Regulation 45-48 and AFROTC Manual 46-1.

(3) One-hundred-eighty credits of acceptable collegiate work, exclusive of the required credits in Physical Education, Military Science or Air Science, of which a minimum of 150 credits must be "C" grade or better.

(4) Sixty credits of Upper Division work.

(5) The completion of a major, a minor, and related work as outlined under *Upper Division*.

(6) The completion of the group requirements and of nine hours in Basic Communication or its equivalent. For students who enter the University prior to 1955, the completion of English 10 and 110 or of English 17, 18, and 19 will be considered as the equivalent of nine hours in Basic Communication.

(7) The maximum amount of home study credit which can be applied toward a Bachelor's degree is 45 credits.

(8) Applicants for degrees who have taken courses for credit through the Division of Off-Campus Education are subject to the regular University instruction requirements and must file transcripts of credit with the Registrar's Office.

(9) Candidates for a Bachelor's degree must complete at least 45 credits in residence or off-campus work from Utah State University, exclusive of any home study credit as provided in No. 7 above. Of these 45 credits, a minimum of 15 must have been earned in residence at the Logan campus within one quarter or two Summer School sessions, not necessarily consecutive.

(10) 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.

Grade points have been assigned to grades as follows: 4 grade points for each credit of "A," 3 for each credit of "B," 2 for each credit of "C," 1 for each credit of "D," and 0 for each credit of "F." For graduation, you must have twice as many grade points as you have credits for which grades of "A," "B," "C," "D," and "F" have been



assigned. Credits of "P" grade are disregarded in computing grade point averages.

(11) 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 college in which the major work is done.

(12) The candidate should file an "Application for Graduation" as soon as possible after the first day of the winter quarter. If you fail to file your application for graduation by May 1 you will be held over to the next year's commencement.

(13) The candidate must have discharged all University fees.

(14) Attendance at Commencement Exercises is expected of all candidates. If unable to attend you must notify the dean of your college in advance.

# Student Fees

The University reserves the right to alter any of these charges without notice.

## Resident Students

	Student's First Quarter	Student's Second Quarter	Student's Third Quarter
Registration .....	\$10.00	\$10.00	\$10.00
Tuition .....	33.00	33.00	33.00
Building .....	7.00	7.00	6.00
Student Body .....	4.00	4.00	4.00
Athletic .....	4.00	4.00	4.00
Class Fee .....	1.00		
Health Fee .....	1.00	1.00	1.00
<b>Total Fees .....</b>	<b>\$60.00</b>	<b>\$59.00</b>	<b>\$58.00</b>

## Non-Resident Students

	Student's First Quarter	Student's Second Quarter	Student's Third Quarter
Registration .....	\$10.00	\$10.00	\$10.00
Non-resident .....	35.00	35.00	35.00
Tuition .....	33.00	33.00	33.00
Building .....	7.00	7.00	6.00
Student Body .....	4.00	4.00	4.00
Athletic .....	4.00	4.00	4.00
Class Fee .....	1.00		
Health Fee .....	1.00	1.00	1.00
<b>Total Fees .....</b>	<b>\$95.00</b>	<b>\$94.00</b>	<b>\$93.00</b>

## Special Fees

Excess Registration Fee: For each excess hour (except one hour of Military Science, Air Science, or Physical Education) .....\$10.00

Students may register for 19 hours per quarter in the Engineering and Technology College or 18 hours in other colleges without paying excess registration fees.

**LATE REGISTRATION FEE:** \$5 beginning second day after specified Registration Days; additional \$1 for each additional day up to a maximum of \$10.

A student whose check is dishonored by his bank will be charged the late fee in effect when the check is redeemed.

**Change in Course or Study List:** No charge for the first week of the Quarter. \$1 for each change made thereafter.

**Final Deadline for Course Changes:** Course changes, adds or drops, may be made through the third week of the Quarter. Thereafter, through the seventh week only, courses may be dropped from but not added to the study list (academic program).

Special Students—Registration fee.....\$10.00  
Plus \$3 per credit hour (maximum 9 credits)

Visitor Fee—Registration as listener or visitor in lecture course only in which no credit is desired, per quarter, per subject ..... 10.00

Qualifying Examination—Graduate School  
1 Part ..... 5.00  
2 Parts ..... 6.00

Graduation Fee ..... 10.00  
Teacher Placement Fee ..... 5.00  
Teacher Placement re-registration ..... 2.00  
Locker Rental—Fall, Winter and Spring ..... 1.50

Fifty cents of this fee is refunded to students upon returning the key accompanied by receipt, prior to the first Friday following Commencement exercises.

## 22 USU — Student Fees

Transcript of Credits. Each student is entitled to one transcript free.

Additional transcript (Extra copies 25c) ..... 1.00

Progress Report. Adviser furnished one copy free. Additional copies .....25c to 50c  
Note fee ..... 2.00

Cap and Gown Rental—Bachelor of Science ..... 3.00  
Master of Science ..... 6.50  
Master's Degree Fee for binding and proofing thesis ..... 5.00

College of Business and Social Sciences—Students using business machines will be required to pay a fee of \$2 per quarter.

College of Forest, Range, and Wildlife Management—

Senior Field problems:  
Forestry 146 ..... 35.00  
Range Management 196 ..... 30.00  
Wildlife Management 171 ..... 35.00

A minimum excess breakage fee of \$5 may be required for Laboratory classes.

Military Uniform Deposit ..... 5.00

The above deposit is refundable upon presentation of clearance slip from department—accompanied by receipt showing that payment was made.

Registration is not complete until you have presented your fee card at the Cashier's Window, office of the Controller and have paid your fees, and filed your registration cards with the Registrar's Office.

Music—Individual Instruction with members of the College staff:

One lesson per week (10 lessons) per Quarter (1 credit) ..... 30.00

Fees must be paid at beginning of quarter before instruction begins.

Individual instruction with additional authorized teachers is registered for at the college and given like credit, but paid for by private arrangement with the teacher concerned.

Practice Fees:

Practice Room with Piano, 1 hour per day per Quarter ..... 2.50

Practice Room without Piano, 1 hour per day per Quarter ..... 1.75

Organ, 1 hour per day per Quarter ..... 5.00

Speech—The fee for Speech 12 and 112 is \$20 per credit hour per quarter, consisting of 10 private lessons. Authorized instructors are; Burrell F. Hansen, Floyd T. Morgan, Chester J. Myers, Parley Newman, Gwendella Thornley, Rex E. Robinson.

**Refunds.** All fees paid, with the exception of the \$10 registration fee, may be refunded to any student in residence who withdraws from school before the end of the seventh week, in proportion that the number of instructional weeks subsequent to withdrawal bears to the number of instructional weeks in the period covered by the fees paid.

According to the constitution of the Associated Students, you as a regularly enrolled student must obtain, at time of registration, a Student Body card which will admit you to all activities controlled by the Associated Students: athletic events—football, basketball, tennis and track—dramatics and musical entertainments, socials, lectures, etc.; will give you a copy of the yearbook if student body fee was paid for all quarters, and a subscription to the University newspaper. The system has been found to be a great saving to the students and an excellent means of fostering proper interest in student activities.

*No operation is static; change is the normal condition.*

# University Library

Milton Abrams, Librarian

Office on Library Mezzanine

The University Library maintains a program consistent with the growth and increased demands of the faculty and studentbody. The organization of the Library system is as follows:

(I) *Branch Libraries*, located in the colleges they serve: (A) *Engineering*. (B) *Forest, Range and Wildlife Management*. (C) *Home and Family Living*.

(II) *Special Libraries*, all located outside the Main library: (A) *The Anne Carroll Moore Library*, located in the Edith Bowen School. A special collection of children's books and a working laboratory for the training school. (B) *The Audio-Visual Library*, located in the basement of Old Main. Provides film services on and off the campus. (C) *Claypool Map Library*, housed in the Geology department. Features geologic maps as well as several other types which are available for general campus use. (D) *The Music Library*, located in the Student Union Building. Records and listening rooms are available for student use. (E) *The Hatch Memorial Library* represents an authentic Sixteenth century setting. It houses the Library's collection of rare books along with the most

valuable books on art and architecture.

(III) *Resources of the Library include*: (A) Approximately a quarter of a million volumes; (B) 2,000 periodical subscriptions; (C) Depository for the United States Government documents; (D) Selective depository for United Nations publications; (E) Exchange holdings of state, territorial, and foreign documents; (F) A growing collection of documentary microfilms and micro-cards.

(IV) *Teaching Program*. The Library instructional program serves two functions: (A) It stresses the use of Library resources through cooperation with all teaching and research programs; (B) The Library offers courses in a separate curriculum in the College of Education. Under this program you may meet the requirements for a Class "A" Librarian's Certificate issued by the Utah State Department of Public Instruction. You may complete a Library minor in connection with a major in Education, and the courses can be used to meet the requirements of the Northwest Association of Secondary and Higher Schools.

*Men advance by taking advantage of the opportunities at hand.*



# Explanation of Course Numbering System, Quarters and Credits

Each course listed in the catalog has a number, given immediately before the name of the course. For example in the English Department there appears:

## 4. Elements of Grammar.

That means the course, Elements of Grammar, is English 4. The numbers are useful for reference and records.

*Courses numbered 1 through 99 are Lower Division courses; that is, courses ordinarily taken either the Freshman or Sophomore year. Courses numbered 100 through 199 are Upper Division courses; that is, courses ordinarily taken either the Junior or Senior year. Courses numbered 200 or above are Graduate courses; that is, courses taken by Graduate students.*

*As a Freshman or Sophomore you may take any Lower Division course. If there is a prerequisite for a particular course, it will be so stated in the course description. You may take an Upper Division course if you obtain in advance the consent of the instructor and your adviser.*

*As a Junior or Senior you may take any Lower or Upper Division course. Any prerequisites to a course will be mentioned in the course description. You may take certain Graduate courses if you obtain in advance the consent of the instructor and your adviser.*

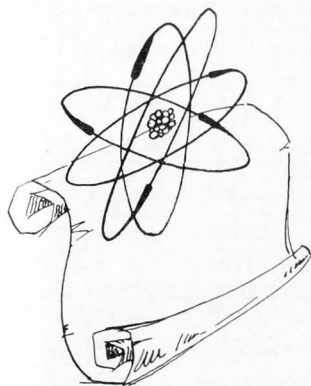
*As a Graduate student you may take any course, but only Graduate courses and certain specified Upper Division courses yield Graduate credit.*

At the end of each course descrip-

tion are listed the number of credits given for the course, the quarter/s it will likely be taught, and the name of the instructor. The credits and the quarter/s it will be taught are indicated in abbreviated form in parentheses. For example: (3F) indicates that the course offers three credits and will likely be taught Fall Quarter. (5F, W, S, Su.) indicates that the course offers five credits and will likely be taught all four quarters: Fall, Winter, Spring, and Summer. It *does not* mean that you have to take the class all four quarters, but rather that you have your choice of any quarter. In some cases, such as (5F, W, S) even though more than one quarter is indicated, the course will not be given each quarter, but only one of these quarters, the exact one yet to be decided. For more definite, up-to-date information, you should refer to the *Class Schedule* published just prior to the beginning of each new quarter. All Catalog listings are subject to change.

Occasionally you will see two or more closely related courses listed under one entry, such as English 1. 2. 3. **Basic Communication.** The credit entry will read: (3F, 3W, 3S) That means that each of the three courses, 1., 2., and 3., offers three credits.

Where a single course, for example Music 133. **Choir.** has such an entry: (1F, 1W, 1S) it indicates that the same course may be taken for credit more than just one quarter. Choir, for example, could be taken all three quarters, giving you one credit each quarter.



## *University College*



**Carlton Culmsee, Dean**

# University College

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*Degrees Offered:*

Bachelor of Science

Master of Science

Doctor of Philosophy

# University College

Carlton Culmsee, Dean  
Office in Main 182

*Scope of University College:* Besides providing basic courses for students enrolled in professional and technical divisions of the institution, the University College enables all students in the University 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 been so urgent as now. Such understanding is believed to be a path to permanent peace. Many courses in the College qualify you directly to play your part as an

informed citizen in attempts to realize that great hope. The curricula of the College also enable you to major in any of the various departments and thus begin preparation for your career.

The University College includes the Departments of Bacteriology and Public Health; Chemistry; English, Journalism, Photography and Photographic Journalism; Geology; Environmental Planning and Landscape Design; Languages; Mathematics; Physics; Speech; Zoology, Entomology, and Physiology.

## General Education

Office in Main 182

### Two-Year Program and Diplomas

You may earn the title of *Associate in Arts* or *Associate in Sciences* and a two-year diploma by completion of a program in basic education. It is believed that the prescribed studies will be helpful to you, whether you complete only two years of college or whether you continue until you receive a Bachelor's degree. Although the total number of credit hours required in this program is larger than that required for the completion of the "group requirements" now current, the student may also specialize to some extent in these first two years of college.

The courses from the University College, the College of Business and Social Sciences, and the College of Education, are outlined by the Coordinator of Liberal Studies, and vary with the field of concentration that you choose.

### Integrated Courses

The following are broad courses which may be used to satisfy group requirements. They are listed here to facilitate selection and advisement.

#### Biology

Administered by the staffs of the Departments of Bacteriology and Public Health; Botany and Plant Pathology; Zoology, Entomology, and Physiology.

**1. Principles of Biology.** Basic principles of life as illustrated in plants and animals, with emphasis on concepts of fundamental importance, including organization of living things, energy relationships, growth, relation to environments, kinds of living things, reproduction, development, inheritance, and evolution. Five lectures. (5F, W, S, Su) **Staff**

#### Physical Science

Administered by the staffs of the

Departments of Chemistry; Geology; Physics.

31, 32, 33. **Physical Science.** Principles essential to understanding the physical universe. Elements of astronomy, chemistry, geology, and physics integrated for use in interpreting human experiences. Intended to meet the physical science group requirements upon completion of all three quarters. (3F, 3W, 4S)

Staff

### Humanities (Languages and Arts)

English 34, 35, 36—Great Books and Ideas.

English 40, 41—World Literature.

English 53, 54—American Literature.

In addition it is recommended that you complete at least one of the following:

English 48—Modern European Literature

English 58—Modern American Literature.

English 68—Modern English Literature.

It is also recommended that you complete one of the following:

Visual Arts 3; 26; 36.

Music 1; 90.

Two years of a foreign language are also recommended as an option for satisfaction of the Languages

and Arts, or Humanities, group requirement.

### Social Science

**History 4. Ancient World Civilization.** The cultural heritage of the world from earliest times to the sixteenth century. The Near and Far eastern civilizations, with emphasis on the European heritage: Greece, Rome, Christianity, Middle Ages, Renaissance and Reformation. (5F, S) **Ellsworth**

**History 5. Modern World Civilization.** The cultural heritage of the world from the sixteenth century to the present. Emphasis on European civilization and its spread—the Americas, the Near and Far East. (5W) **Ellsworth**

It is also recommended that you take:

**Political Science 1—Government and the Individual.**

**General Social Science.**

**History 13, 14—United States History.**

You are encouraged to broaden your liberal education with other courses in basic sciences and humanities, landscape architecture, political science, economics, and sociology.

## Liberal Studies

ASSOCIATE PROFESSOR *T. Y. Booth*, COORDINATOR.

Office in Library 306

The program in Liberal Studies has two functions. One is to provide a course of study combining elements of both the humanities and the sciences and leading to a degree in Liberal Studies. Considerable flexibility is afforded through choice among several curricula. The goal is substantial, orderly, well-balanced mental development of a broad type. Eventual selection of a field of concentration in the general area of either the sciences or the humanities is required for a degree.

The second function of the Liberal Studies program is the advisement of students who have not decided upon a major subject or area of specialization. The Liberal Studies coordinator finds a suitable adviser for each of these students. With the aid of this adviser he looks after the student's academic interests, encouraging him to pursue a general Liberal Studies program while he explores his own aptitudes and various career opportunities so that he can choose a major field. Advisers are selected from all col-



leges of the university on the basis of personality qualifications and student interests.

If you are enrolled in another department but believe that you have chosen your major unwisely you may transfer to the Liberal Studies program upon receiving permission from the Office of Student Services and Dean of University College.

### Curricula in Liberal Studies

The following three courses of study, each leading to a Bachelor's degree, are available in Liberal Studies. You are not required to complete a separate minor. Because of the requirements for basic courses in several fields, upper division requirements for graduation may be reduced to a minimum of 50 credit hours.

**I. Main Currents in Western Civilization.** Two years of a foreign language; a concentration of 40 hours in either history or literature and 15 hours in the one not chosen for concentration; 14 hours in philosophy<sup>1</sup>; 15 hours in one of the sciences or in mathematics.

(A) Literature. (1) For concentration: English 40, 41, 147, 148, 149; and 15 hours selected from English 46, 150, 151, 152, 190, 191 and classes in the literature of a foreign language. (2) For the 15-hour requirement: any 15 hours from the above courses.

(B) History. (1) For concentration: History 4, 5, 6; and 25 hours from History 10, 13, 14, 105, 106, 111, 124, 127, 152, and 175. (2) For the 15-hour requirement: History 4, 5, 6.

<sup>1</sup>Although USU does not have a department of philosophy, English 45 offers readings in philosophical literature; Political Science 145, 146 and 147 deal with political philosophies; and the Languages Department offers nine hours of philosophy.

Fourteen hours from among the following:

(C) Philosophy. English 45; Philosophy 140, 141, 142, Political Science 145, 146, 147.

(D) Mathematics and science. Complete one of the following series: (1) Biological science: Zoology 3 or Botany 24 or Bacteriology 10; Zoology 107 and 131; Public Health 50. (2) Chemistry: Chemistry 3, 4, 5 or 10, 11, 12. (3) Mathematics: Mathematics 35, 46, 97. (4) Physics. Physics 17, 18, 19 or 20, 21, 22. If you select the series in physics you should fill the exact science group requirement with Mathematics 35 and 46, and are advised to complete Mathematics 97 also.

**II Languages and World Literature.** Thirty-nine hours in foreign languages; 40 hours in literature; 30 hours in philosophy.

(A) Languages: Two years in one foreign language; one year in a second foreign language.

(B) Literature (40 hours) (1) At least 25 hours selected from English 40, 41, 46, 140, 142, 147, 148, 149, 168, 169. (2) At least nine hours in the literature of one or more foreign languages.

(C) Philosophy: English 45; Philosophy 140, 141, 142; History 4, 5; any two (six hours) of Political Science 145, 146, 147.

**III. Science and Philosophy.** Two years of a foreign language; a concentration in either mathematics and physical science or in biological sciences as specified below; 30 hours in history, philosophy and literature.

(A) Science: Complete one of the following programs: (1) Physical science and mathematics.<sup>2</sup> Mathematics 35, 46, 97, 98, 99, 110 and either (a) or (b). (a) Chemistry 3, 4, 5 or 10, 11, 12; Physics

17, 18, 19 or 20, 21, 22; 120, 121, 130 or 146, 153, 154 or 175, 176, 177. (b) Physics 17, 18, 19 or 20, 21, 22; Chemistry 3, 4, 5 or 10, 11, 12; 104, 105, 106 or 121, 122, 123.

(2) Biological sciences.<sup>2</sup> Zoology 3, 4, 101, 107, 112 or 113, and 131; Botany 24, 25, 30, 118; Bacteriology 10, 160; Public Health 50, 155; Physiology 120. If you select this series you should fill the physical science group requirements with classes in chemistry or physics.

(B) History, literature, philosophy. 30 hours from among the following, shared among at least

<sup>2</sup>Ten of these hours may be applied toward the group requirement in the field.

three departments: English, American or Comparative Literature or the literature of a foreign language; Philosophy 140, 141, 142; History; Political Science 145, 146, 147; Sociology 70; Economics 51, 52.

### General Registration

Students who have been admitted by the University but who do not have permission to enter one of the professional colleges or specialized departments may, with the approval of the dean, enroll in the University College in the program entitled General Registration (010).

## Department of Bacteriology and Public Health

(Bacteriology, Public Health, Medical Technology)

PROFESSORS *W. W. Smith*, HEAD, *K. R. Stevens*; ASSOCIATE PROFESSOR *L. W. Jones*; ASSISTANT PROFESSOR *P. B. Carter*; LECTURERS *J. H. Carlquist*, *H. H. Clark*, *R. S. Fraser*, *R. A. Roberts*, and members of the *Cache Valley Medical and Dental Associations*.

Office in Plant Industry 310

### Bacteriology and Public Health

*Bachelor of Science Degree.* For a General Bacteriology major you should take: Bact. 10 or 70, 71, 101, 104-105 or 120-121, 110, 160, 168, 172, 180, 291; Chemistry 3, 4, 5, 115, 121, 122, 191; Mathematics 35, 44; Physics 17, 18, 19; Public Health 50; Botany 24, 25; Zoology 3, 4; Library Science 100.

For a Public Health major you

should take: Public Health 15, 50, 150, 151, 155, 156; Bacteriology 10 or 70, 71; Dairy 6; Physiology 4 or 120; Zoology 3, 4, 111, 116.

For a Health Education major you should consult *H. B. Hunsaker*, head of the Department of Health, Physical Education and Recreation.

For a minor in Health Education you should take: Public Health 15, 50, 150, 156; Physical Education 135, 145; Food and Nutrition 6; Psychology 145 and Child Development 67.

## Graduate Study

*The Department of Bacteriology and Public Health has good facilities for research and advanced studies.* Available on the third and fourth floors of the Plant Industry building are the usual technical instruments. The department also has access to an electron microscope, ultra centrifuge, electrophoresis apparatus, spectrograph, flame spectrophotometer, and other major research instruments.

*Master of Science in Bacteriology.* (See also "Master of Science Degree" in School of Graduate Studies in the Catalog.) The Master's degree in bacteriology combines a substantial research effort with a rounding out of your course work in bacteriology and related subjects. At the conclusion of the Master's degree you are expected to have completed most of the bacteriology courses offered in the department, plus chemistry through some advanced biochemistry courses, mycology and protozoology.

*Doctor of Philosophy in Bacteriology.* (See also "Doctor of Philosophy Degree" in School of Graduate Studies). The doctorate in bacteriology is primarily a research degree. A doctoral thesis comprising an intensive and definitive contribution to knowledge is the most basic requirement. In previous training or in the doctoral program you are expected to have course work in bacterial physiology, systematic bacteriology, dairy or food bacteriology, soil or industrial bacteriology, mycology, protozoology, virology. You are expected to have supporting strength, probably as minors or parts of mixed minors in several of the following: algology, biochemistry, physical chemistry, pathology, physiology,

histology, entomology, genetics, plant physiology, physics, biophysics, and other science specialties.

You are expected to offer two of the following research tools: applied statistics, a reading knowledge of German, a reading knowledge of French, or suitable substitutes justified by the nature of the doctoral project. These should be completed at least one year before the final examination.

*All candidates for the Ph.D. in bacteriology must have received the equivalent of 40 credits either before or during the doctoral program at some institution other than Utah State, which offers at least a Master's in Bacteriology.*

## Bacteriology Courses

**1. Principles of Biology.** Basic life principles illustrated in both plant and animal forms. Designed in combination with Bact. 10 or Physiology 4 to meet the University biological science requirements. (5F, W) Jones

**10. Elementary Bacteriology.** Basic concepts, practical applications, demonstrations. (Not open to students who have had Bacteriology 70.) (5F, W, S, Su) Smith, Stevens, Carter

**70. General Bacteriology.** For majors in science departments. (Not open to students who have had Bacteriology 10.) Not taught 1958-59. (3F, W, S) Staff

**71. General Bacteriology Laboratory.** Prerequisite: Previous or concurrent registration in Bact. 10 or 70. Two 3-hour labs. (2F, S) Smith, Carter

**101. Systematic Bacteriology.** Classification relationships. Prerequisite: Bact. 10 or 70. Alternate years. Taught 1958-59. (2S) Smith

**104. Dairy Bacteriology.** Micro-organisms of milk and its products. Prerequisite: Bact. 10 or 70. Alternate years. Not taught 1958-59. (3F) Jones

**105. Dairy Bacteriology Laboratory.** Two 3-hour labs. Prerequisite: Bact. 71, and previous or concurrent registration in Bact. 104. Alternate years. Not taught 1958-59. (2F) Jones

110. **Soil Microbiology.** Relationships of micro-organisms to soil fertility. Prerequisite: Bact. 10 or 70. Alternate years. Taught 1958-59. (2W) Jones

120. **Food Microbiology.** Relationships of micro-organisms to food preservation, spoilage, and poisoning. Prerequisite: Bact. 10 or 70. Not taught 1958-59. (2F) Smith

121. **Food Microbiology Laboratory.** Not taught 1958-59. (2F) Smith

160. **Pathogenic Bacteriology.** Properties of pathogens and relationships to infectious diseases. Prerequisite: Bact. 71. Three lectures, two labs. (5F) Carter

168. **Immunology.** Prerequisite: Bact. 160. Three lectures, two labs. (5W) Carter

172, 173. **Bacteriology Laboratory Methods.** (2W, 2S) Jones, Smith

180. **Physiology of Bacteria.** Cellular chemistry and physiology. Prerequisites: Bact. 10 or 70, Organic Chemistry (4S) Jones

190. **History of Bacteriology.** Not offered 1958-59. (2S) Jones

261. **Advanced Pathogenic Microbiology.** Common pathogenic molds, yeasts, and viruses. Prerequisite: Bact. 160. Four lectures, one lab. (5S) Carter

291. **Seminar.** (1F, W, S) Staff

294. **Special Problems in Bacteriology.** Special assignments, reports, and discussions. Preparation of a comprehensive and critical review. Time and credit arranged. Prerequisite: consent of instructor. (F, W, S) Staff

299. **Thesis Research.** Time and credit arranged. (F, W, S) Staff

## Public Health Courses

Public Health courses do not satisfy biological science group requirements.

15. **Personal Health.** Health problems of University students; especially for freshmen and sophomores. (2F, W, S)

Stevens, Members of Cache Valley Medical and Dental Associations

50. **Elementary Public Health.** Communicable and non-communicable diseases of general community significance. (3F) Jones

150. **Environmental Sanitation.** Biological background; control of air; insect; water; rodent; refuse; and food-transmitted diseases; housing, camping, and school sanitation. Alternate years. Not taught 1958-59. (4F) Staff

151. **Public and School Health Administration.** Organization, administration and functions of health agencies. Prerequisite: P.H. 50. Not taught 1958-59. (3F) Staff

155. **School Health.** Health training for state certification requirements in health education. (4F, W, S, Su) Stevens

156. **School Health Methods.** Objectives, methods, curricula, and materials. Prerequisite: P.H. 155. Alternate years. Taught 1958-59. (3S) Stevens

159. **Public Health Laboratory Methods.** Experience in the practice of the Public Health Laboratory. (3 to 15 F, W, S) Fraser

254. **Special Problems in Public Health.** Assignments, reports, discussions. Preparation of a comprehensive and critical review. Time and credit arranged. (F, W, S) Staff

256. **School Health Methods for Secondary Schools.** (3Su) Staff

## Medical Technology

The University College offers courses which satisfy entrance requirements for Medical Technology internships in the United States, Canada, and Hawaii. A two-year program is required to complete minimum requirements. Also, the University provides a three-year course which, combined with the internship, qualifies you for the B.S. degree.

For a Medical Technology major you should take during your first three years: Bact. 10, 71, 101, 131, 160, 168; Chemistry 3, 4, 5, 12, 17, 18, 190; Physiology 4; Physics 6; Public Health 50; Zoology 3, 4, 116; and meet all University requirements except for total credits and upper division. A hospital internship for twelve months shall be completed during the fourth year, which shall include instruction in Bact. 133, 134, 135, 136, 137, 138, 139. Utah State University has provision for instruction of laboratory technicians in this internship in the LDS hospital in Salt Lake City or either the St. Benedict's hospital or the LDS hospital in Ogden. During this fourth year, you register for

three quarters. When this program is satisfactorily completed, you are eligible for the Bachelor of Science degree in Medical Technology. You may then also apply for certification by the Registry of Medical Technologists after completion of a qualifying examination given by the American Society of Clinical Pathologists. (Consult Paul B. Carter for further details.)

## Medical Technology Courses

**131. Clinical Laboratory Methods.** Prerequisite: Bact. 71. Alternate years. Not taught 1958-59. (4S) Carter

**133, 134, 135. Applied Medical Technology.** Practical work in hospital laboratories under close supervision: Clinical Bacteriology and Serology, two months; Clinical Biochemistry, three months; Clinical Hematology, one month; Pathological Tissue Methods, two months; Blood Bank Procedures, two months; Electrocardiograph and Basal Metabolism Procedures. (13F, W, S) Carlquist, Clark

**136. General Pathology Discussions.** (2F) Carlquist, Clark

**137. Clinical Laboratory Methods Discussion.** (2W) Clark

**138. Blood Bank and Blood Serology Techniques.** (1S) Clark

**139. Pathological Conference.** (1S) Carlquist, Clark

# Department of Chemistry

PROFESSORS *M. C. Cannon*, HEAD, *S. Maeser*, EMERITUS, *T. M. Burton*,\* *D. A. Greenwood*; ASSOCIATE PROFESSORS *N. Bauer*, *G. L. Lee*, *H. O. Van Orden*; ASSISTANT PROFESSORS *G. O. Larson*, *L. G. Tensmeyer*; RESEARCH ASSISTANT PROFESSORS *R. Lamborn*, *T. Myint*, *H. M. Nielsen*, *L. E. Olson*.

Office in Widtsoe Hall 201

**Major.** The degree of Bachelor of Science in Chemistry is a professional degree. Graduates who meet the requirements of the American Chemical Society, by which the Department is approved, and who fill the group requirements of the University as given in this catalog, will be certified by the Society. Completion of the suggested schedule below will enable you to meet all these requirements.

**Minor.** It is recommended that if you desire a minor in Chemistry you complete a minimum of eight credits of upper division chemistry courses. Suggested courses which will meet these requirements are: Chemistry 101, 115, 121, 122, 190, 191.

**Teaching Majors.** If you desire to complete a teaching major in chemistry you should complete the following minimum program: Chemistry 3, 4, 5, 101, 115, 121, 122, and 190 or 191. Supporting courses to be taken are Physics 17, 18, 19 and Mathematics 35, 46, and 97. For a composite teaching major in physical science the following minimum schedule is recommended: Chemistry 3, 4, 5, 12 or 121, 101 or 190; Physics 17, 18, 19, 120, 121; Mathematics 35, 44 or 46, 97, 98, 99. Required professional education courses for the teaching certificate are listed by the College of Education.

\*On leave.



## 34 USU — University College

### Chemical Engineering

If you are interested in obtaining a degree in Chemical Engineering you may pursue the first two years of this program at USU. Courses taken under this program will be accepted at other universities giving the degree. The proposed curriculum of study for Chemical Engineering is listed in this catalog under the College of Engineering.

### Graduate Study

The Chemistry Department offers the Master of Science degree with research in any one of the following fields: Analytical, Biological, Inorganic, Organic, and Physical Chemistry. Besides graduate courses (in the 200 series), courses 116, 124, 135, 155, 191 may be used toward the Master's degree in Chemistry. (Any course in the 100 or 200 series may be counted toward the Master's degree by a non-Chemistry major if his supervisory committee approves.)

Before admission to candidacy for the degree, you are required to pass the National Cooperative Examinations of the American Chemical Society for undergraduate training, in General Chemistry, Qualitative Analysis, Quantitative Analysis, Organic Chemistry and Physical Chemistry.

*Doctor of Philosophy Degree.* The Chemistry Department in cooperation with related departments offers advanced study and research leading to the degree of doctor of philosophy. Detailed information may be obtained from the head of the Department.

A graduate program in Biochemistry and Nutrition leading to a Master of Science or a Doctor of Philosophy degree is available in cooperation with departments giv-

ing courses in these areas. Detailed information may be obtained from the head of the Department or from the dean of the School of Graduate Studies.

### Suggested Schedule for Undergraduates

To aid you in registering, the following suggested schedule is given.

Freshman			
	F	W	S
Chemistry 3, 4, 5 .....	5	5	5
Mathematics 35, 46, 97 (or 34, 35, 46) .....	5	5	5
English 1, 2, 3 .....	3	3	3
Military or Air Science or Physical Ed. ....	1	1	1
Electives .....	3	3	3
Total .....	17	17	17

Sophomore			
	F	W	S
Mathematics 98, 99, 110 (or 97, 98, 99)* .....	5	5	5
Chemistry 17, 18 .....	5	5	—
Physics 20, 21, 22 .....	5	5	5
Military or Air Science or Physical Ed. ....	1	1	1
Electives .....	—	—	5
Total .....	16	16	16

\*Mathematics 110 to be taken Senior year

Junior			
	F	W	S
Chemistry 121, 122, 123 .....	5	5	5
Chemistry 104, 105, 106 .....	3	3	3
Chemistry 109, 110, 111 .....	1	1	1
German 1, 2, 3 .....	5	5	5
Electives .....	3	3	3
Total .....	17	17	17

Senior			
	F	W	S
Physics 120, 121 .....	3	3	—
Chemistry 135, 191 .....	3	—	5
English 111 .....	—	—	3
Chemistry 160 .....	1	—	1
Chemistry 198 .....	1	1	—
Electives, group requirements .....	9	13	8
Total .....	17	17	17

## Chemistry Courses

3, 4, 5. **Chemical Principles and Qualitative Analysis.** Introduction to chemical theory and principles of chemistry, including introductory qualitative analysis. For science majors, pre-medical and pre-dental students, home economics majors in foods and nutrition. Prerequisites: two of the following high school courses: advanced algebra, chemistry, physics. (5F, 5W, 5S) **Maeser**

10, 11. **General Chemistry.** Principles of inorganic chemistry. Prerequisite: One unit of high school or college algebra. (5F, 5W, 5S) **Lee**

12. **Elementary Organic Chemistry.** An introduction to organic chemistry. Designed to follow Chemistry 11 and completes a one-year terminal course in chemistry. (5S) **Lee**

17, 18. **Quantitative Analysis.** Theory and laboratory practice of gravimetric and volumetric analysis. Prerequisites: Chem. 5, Math. 35. (5F, 5W) **Cannon**

31, 32, 33. **Physical Science.** Principles essential to understanding the physical universe. Elements of astronomy, chemistry, geology, mathematics and physics integrated for use in interpreting human experience. Intended to meet the physical science group requirements upon completion of all three quarters. (3F, 3W, 3S) **Staff**

101. **Elementary Physical Chemistry for Biologists.** A lecture survey of basic quantitative laws governing chemical processes, applied to examples of biological interest. Mathematical derivations are kept to a minimum. Recommended as a prerequisite for those interested in biological or medical research. Prerequisites: Chem. 12 or 5; Math. 34 or equivalent (3S) **Bauer**

104, 105, 106. **Physical Chemistry.** Quantitative methods for solving problems in chemical thermodynamics, phase change, electrochemistry, reaction kinetics, quantum theory, and molecular structure. Prerequisites: Chem. 5, 18; Physics 20, 21, 22; Math. 99. (3F, 3W, 3S) **Tensmeyer**

108. **Dairy Chemistry.** The chemistry of milk and milk products, including tests for adulterants, preservatives, and routine methods of quantitative analysis of dairy products. Prerequisites: Chem. 12 or equivalent; Chem. 190. (Taught alternate years. Not taught 1958-59.) (4W) **Van Orden**

109, 110, 111. **Experimental Physical Chemistry.** Laboratory work correlated with Chemistry 104, 105, 106. (1F, 1W, 1S) **Tensmeyer**

115. **Quantitative Analysis.** A brief course in basic theory and laboratory practice of quantitative analysis. Designed primarily for pre-medical and pre-dental majors. Prerequisites: Chem. 5, Math. 35. (5S) **Cannon**

116. **Inorganic Preparations.** A laboratory course in practical methods of synthetic inorganic chemistry. Prerequisite: Chem. 5. (3S) **Lee**

121, 122, 123. **Organic Chemistry.** Fundamentals of the chemistry of carbon compounds. Terminal at the end of the second quarter for non-chemistry majors who desire ten hours credit. Prerequisites: Chem. 5 or 11. (5F, 5W, 5S) **Larson**

124. **Organic Preparations.** An advanced laboratory course in the synthesis of more complex compounds. Prerequisite: Chem. 123. (3F) **Larson**

135. **Chemical Literature.** Exercises in finding, assembling and using information available in technical publications. (3S) **Staff**

155. **Glass Blowing.** A laboratory course in the technique of manufacturing and repairing pyrex brand laboratory glassware. (2W) **Staff**

160. **Seminar.** Time arranged. (1F, W, S) **Staff**

190. **Elementary Biochemistry.** The chemistry of carbohydrates, fats, proteins, enzymes, vitamins, hormones and minerals, and their transformations in plants and animals. Prerequisite: Chem. 12. Terminal course Does not serve as a prerequisite for Advanced Biochemistry. (5F) **Van Orden**

191. **Fundamentals of Biochemistry.** The chemistry of carbohydrates, fats, proteins, enzymes, vitamins, hormones and minerals, and their transformations in plants and animals. Prerequisite: Chem. 122. Serves as a prerequisite for Advanced Biochemistry. (5S) **Van Orden**

198. **Undergraduate Research Problems.** Time and credit arranged. (F, W, S) **Staff**

215. **Chemical Thermodynamics.** Derivation of basic thermodynamic relations and application to selected physical-chemical problems. Prerequisites: Chem. 106; Math. 99. (5F) **Bauer**

225, 226, 227. **Advanced Organic Chemistry.** Extended studies in organic chemistry. Alternate years. Taught in 1958-59. Prerequisites: Chem. 106, 123. (3F, 3W, 3S) **Larson**

232. **The Colloidal State and Surface Chemistry.** Application of physical-chemical principles to surface phenomena. Fundamental properties and theories of colloiddally dispersed systems. Examples of colloidal behavior selected from diverse fields. Prerequisites: Chem. 106, 215; Math. 99. (5W) **Bauer**

**234. Qualitative Organic Analysis.** The classification, reactions and laboratory work involved in identification of unknown organic compounds. (Alternate years. Not taught in 1958-59.) Prerequisites: Chem. 18, 123. (3S) **Larson**

**250. Advanced Inorganic Chemistry.** Based on the periodic table and atomic structure. Designed for chemistry seniors and graduates and others having similar training. Prerequisite: Chem. 104. (Alternate years. Taught in 1958-59.) (3S) **Lee**

**252. Chemical Forces and Molecular Structure.** An interpretation of chemical and physical properties of matter in terms of electrostatic and electrodynamic forces between fundamental particles. Structural properties derived from X-ray crystallography are emphasized. (Alternate years. Not taught in 1958-59.) Prerequisites: Chem. 106, 215; Math. 99. (5S) **Bauer**

**253. Chemical Kinetics.** Fundamental principles governing reaction rates. (Alternate years. Taught in 1958-59.) Prerequisites: Chem. 106, 215; Math. 99. (5S) **Bauer**

**272. Optical Methods of Chemical Analysis.** Problems in spectroscopy, spectrophotometry, colorimetry, refractometry and microscopy. (Alternate years. Not taught in 1958-59.) Prerequisites: Chem. 18, 106. (3F) **Cannon**

**273. Electrochemical Methods of Analysis.** Instruction in potentiometry, polarography, electro-analysis, and related methods as applied to analytical chemistry. (Alternate years. Not taught in 1958-59.) Prerequisites: Chem. 18, 106. (3W) **Cannon**

**274. Advanced Quantitative Analysis.** Special problems in analysis. Prerequisite: Chem. 18. Time and credit arranged. (F, W, S) **Cannon**

**289. Animal Metabolism.** Feeding experiments involving development of amino acid, vitamin, mineral, and other nutritional deficiencies in animals. Chemical and biological tests made on rations, animal tissues, blood, urine, and other secretions and excretions when indicated. Time and credit arranged. (F, W, S) **Greenwood**

**290. Toxicology.** The effects of selected chemical compounds on living organisms. Prerequisites: Chem. 190 or 191 and 122. (3F) **Greenwood**

**291. Toxicology Laboratory.** Qualitative and quantitative determinations of inorganic and organic poisons. Observations of symptoms which develop upon administration of poisons. To accompany Chemistry 290. (2F) **Greenwood**

**292. Advanced Biochemistry: Biochemical Analysis.** Problems in metabolism, micro-methods of blood and urine analysis, with their applications to metabolism and to the diagnosis and treatment of disease. Prerequisites: 190 or 191. To accompany Chemistry 296. (2 or more credits, W) **Greenwood**

**293. Advanced Biochemistry: Biochemical Preparations.** Preparation of enzymes and amino acids. Prerequisite: Chem. 190 or 191. To accompany Chem. 295. (2 or more credits, F) **Greenwood**

**294. Advanced Biochemistry: Biological Assays.** Microbiological and colorimetric methods for determination of vitamins and amino acid in plant and animal tissues. Prerequisites: Chem. 190 or 191; Bacteriology 70 or 71. To accompany Chem. 297. (2 or more credits, S) **Greenwood**

**295. Advanced Biochemistry: Enzymes.** Enzymes and their functions in plants and animals. Should be accompanied by Chem. 293. (Alternate years. Not taught in 1958-59.) Prerequisite: Chem. 190 or 191 and 122. (3F) **Van Orden**

**296. Advanced Biochemistry: Principles of Metabolism.** Carbohydrates, fats and proteins and their metabolism in plants and animals. Should be accompanied by Chem. 292. (Alternate years. Not taught 1958-59.) Prerequisites: Chem. 190 or 191 and 122. (3W) **Van Orden**

**297. Advanced Biochemistry: Vitamins.** Vitamins and hormones and their functions in plants and animals. (Alternate years. Not taught in 1958-59.) Prerequisite: Chem. 190 or 191 and 122. (3S) **Van Orden**

**298. Research.** Graduate students majoring in chemistry may elect research in any branch of the subject. Time and credit arranged. (F, W, S) **Staff**

*The most one can teach another is to lead him to take control of his own life.*

# Department of English and Journalism

(English, Journalism, Photography  
and Photographic Journalism)

PROFESSORS *K. Hendricks*, HEAD, *W. Vickers*, EMERITUS, *C. F. Culmsee*, *I. N. Hayward*, *M. Q. Rice*, *H. W. Smith*; ASSOCIATE PROFESSORS *T. Y. Booth*, *P. Budge*, *M. D. Edwards*, *B. F. Hansen*; ASSISTANT PROFESSORS *J. M. Beyers*, *H. Calder*, *A. H. Frietzche*, *B. I. Hansen*, *J. L. Mortensen*, *J. M. Patrick*, *L. A. Richards*, *J. J. Stewart*, *J. G. Taylor*; INSTRUCTORS *B. V. Allen*, *J. S. Bullen*, *A. L. Hansen*, *K. W. Klages*, *V. L. Nielsen*, *L. G. Reese*.

English Office in Library 320

Journalism Office in Main 182

Photography Office in TG Building

## English

*English Major*: A minimum of 15 credits in the lower division course work drawn from American, English, and world Literature; a minimum of 30 credits of upper division course work. Two years or 24 credits of a foreign language.

*American Studies Major*: The English department, in cooperation with the College of Business and Social Sciences, offers a major in American Studies. The requirements are as follows:

(1) A minimum of 36 credits in English, American, and World Literature, drawn from the following or other approved courses: 40, 41, 45, 53, 54, 58, 60, 61, 147, 150, 151, 154.

(2) A minimum of 16 credits in History, drawn from the following or other approved courses: History 13, 14, 156, 175. A minimum of 11 hours of Political Science, drawn from the following or other approved courses: Political Science 10, 117, 118, 119.

(3) A minimum of six credits

from courses in the following areas: Economics, Sociology, Art, Music, and Education. The specific courses of these areas to be approved by the major professor.

(4) A minimum of two years of modern foreign language, French, German, or Spanish.

(Students with a major in American Studies are not required to present a minor.)

*For an English Teaching Major*: To receive the recognition and recommendation of the English department an English teaching major must present a minimum of 15 credits in the lower division course work drawn from American, English, and World Literature (not including courses submitted for fulfillment of the language arts requirement); and a minimum of 30 credits of upper division course work. All courses must have the approval of the head of the English department.

*English-Speech Composite Major*: A minimum of 35 credits of course work approved by the head

of the English department. (See Speech department for speech requirement.) Courses should be approved by the English advisers—Hendricks for freshmen and sophomores; Smith for juniors and seniors.

**English Teaching Minor:** To obtain the recommendation of the English department, a teaching minor must present a minimum of 25 credits of English course credit; this credit must have the approval of the head of the English department.

As a prospective major or minor you should consult the head of the English department as early in your college career as possible.

### Graduate Study

**Master of Science Degree.** As a candidate for a Master of Science degree you must present a Bachelor's degree with English as a major, or an equivalent. To complete the degree you must (1) take the Graduate Record Examination given by the School of Graduate Studies; (2) pass the English departmental examination; (3) complete 45 credits in course work, of which not more than 15 nor fewer than nine may be thesis credit, and of which ten credits must be in courses numbered over 200; (4) present from the language department, a statement of your proficiency in the reading of one foreign language; (5) present an acceptable thesis; (6) pass successfully the final oral examination under the auspices of the Graduate School.

**Assistantships:** Some assistantships are available for students who qualify as master's candidates in the English department. If you are interested in one of these assistantships you should make formal appli-

cation to the Head of the English department.

### English Courses

**English for Foreign Students.** (See Language Department.)

**1, 2, 3. Basic Communication.** Required of all freshmen. Before credit can be obtained for English 1, the instructor must have received your Placement Test Score. (3F, 3W, 3S)

Staff

**4. Elements of Grammar.** For students who wish training in grammar beyond that given in Basic Communication. (3F, W)

Staff

**5. Vocabulary.** A study of word formation and derivation as a means of understanding scientific terms and of increasing vocabulary. (3F, W, S)

Staff

**12. Practice in Composition.** For students who wish to practice in composition beyond that given in Basic Communication. (3W, S)

Staff

**31. Floating Poetry.** Poetry that has lived in oral tradition since medieval times. (3S)

Hendricks

**32. Readings in Poetry.** To develop appreciation for poetry. Verse forms, various types of poems, and the idea underlying lasting poetry. (3W)

Nielsen

**33. Readings in Short Story.** (3F, W, S)

Rice

**34. Great Books and Ideas.** Man's ideas about himself, the universe, and the divine. (3F)

Rice

**35. Great Books and Ideas.** Man's ideas about social relationships. (3W)

Rice

**36. Great Books and Ideas.** Man's ideas about the modern world. (3S)

Rice

(Courses 34, 35, 36 are related but they are taught as independent units and need not be taken as a series.)

**37. Reading in the Novel.** (3F, W)

Edwards

**40. World Literature Before 1650.** (5F, W, S)

Staff

**41. World Literature from 1660 to the Present.** (5F, W, S)

Staff

**42. Readings in Mythology.** (3S)

Staff

**45. Introduction to Problems of Philosophy.** (5S)

Hayward

**46. The Bible as English Literature.** (5S)

Vickers



48. Modern European Literature. (3F) Staff
53. American Literature, Early Period. (5F, W, S) Staff
54. American Literature, Late Period. (5F, W, S) Staff
58. Modern American Literature. (3F) Smith, Taylor
60. English Literature, Early Period. (5F, W, S) Staff
61. English Literature, Late Period. (5F, W, S) Staff
68. Modern English Literature. (3W) Booth
104. Grammar. Designed for teachers. (3S) Mortensen
105. History of the English Language. (3W) Hendricks
111. Technical Writing. Designed to teach the basic principles and practices of writing that may be adapted to the effective communication of ideas in technical work. For juniors and seniors only. (3F, W or S) Fritzsche
112. Advanced Expository Writing. Concerned with theory, examples, and practice of general expository writing. Emphasizes organization, paragraph development, diction, and revision. Open to all upper division students, and others by permission of instructor. (3W, S) Fritzsche
117. Creative Writing
  - (a) Short Stories. (3F) Rice
  - (b) Essays. (3W) Hayward
  - (c) Poetry. (3S) Nielsen
122. Children's Literature. Prose and poetry of children to the junior high school age. (3F, W) Mortensen
123. Literature for Adolescents. Prose and poetry of the high school age. (3S) Mortensen
124. The Teaching of English. See Education 124. (4S) Budge
134. Literary Criticism. Masterpieces of criticism from Plato and Aristotle to Croce. (4S) Culmsee, Edwards
140. Classical Literature. A study of the literature of Greece and Rome. (5F) Richards
142. European Literature of the Renaissance. (5W) Richards
147. Comparative Literature. The Eighteenth Century in France and England. (3F) Hendricks
148. Comparative Literature. The Romantic Period in England and Germany. (3W) Hendricks
149. Comparative Literature. The Nineteenth Century in England and Europe. (3S) Hendricks
150. American Poetry. From Philip Freneau to the Present. (3F) Hayward
151. American Fiction. Nineteenth and early Twentieth Century fiction writers. (3W) Smith
152. American Drama. Historical treatment of American drama; extensive reading of representative plays. (3S) Smith
154. Major American Authors. Intensive studies of the chief American novelists, poets, and essayists of the Nineteenth Century: (a) Edgar Allen Poe; (b) Ralph Waldo Emerson; (c) Nathaniel Hawthorne; (d) Herman Melville; (e) Mark Twain; (f) Henry James; (g) Walt Whitman. Taught when required. (2) Staff
162. Chaucer. (5F) Hendricks
163. Shakespeare. Comedies and History Plays. (5W) Vickers
164. Shakespeare. The Tragedies. (5S) Vickers
165. Major English Authors. (a) Donne; (b) Johnson and Boswell; (c) Shelley; (d) Tennyson; (e) Browning; (f) Arnold. Taught when required. (2) Staff
168. Readings in World Drama. (5F) Booth
169. Readings in World Drama. (5W) Booth
170. Milton. (3S) Rice
175. Literature of the English Renaissance. (5W) Fritzsche
180. Restoration and Eighteenth Century. (5F) B. I. Hansen
190. The Romantic Period. (5W) Patrick
191. The Victorian Period. (5S) Booth
199. Readings and Conference. Time and credit arranged. Any quarter. Students must have the approval of the Head of the department. Staff
200. Thesis. Time and credit arranged. (F, W, S) Staff
201. Bibliography and Methods. Required of all candidates for the master's degree in English. (3F) Smith
209. Anglo-Saxon. Required of all candidates for the master's degree. (5W) Hendricks

211. **Bibliography and Research Methods.** An intensive course in preparation of bibliography, use of source materials, and other problems of thesis writing. Open to graduate students only; recommended for first quarter of graduate study. (2F, W, S) **Staff**

234. **Seminar in Modern Criticism.** (3F) **Patrick**

252. **Seminar in American Literature** (3W) **Smith, Culmsee**

253. **Seminar in American Literature.** (3S) **Smith, Culmsee**

261. **Reading of Middle English.** (3F) **Hendricks**

275. **Seminar in English Literature 1580-1685.** (3W) **Frietzsch**

280. **Seminar in Eighteenth Century Literature.** (3S) **Hendricks**

290. **Seminar in Nineteenth Century Literature.** (3F) **Booth**

## Journalism

Office in Main 182

For a major in Journalism you should complete Journalism 1 through 6, 12, 13, 14, 16, 81, 91, 96, 112, 114, 115, 125, 156, or 164, 166; Photographic Journalism 51, 151; English 1, 2, 3, 5, 45, 58, 117a, b, or c.

You are urged to complete as many of the following as possible: Journalism 182; English 34, 35, 36, 40, 53, 54, 58, 40, 46, 60, 63, 105, 134, 149; Philosophy 140, 141, 142. It is recommended that a minor be selected from the following: Accounting, Art, Business Administration, Economics, English, History, Language, Political Science, Psychology, Sociology, Speech. See also Photographic Journalism.

*Majors are available in Agricultural Journalism, Home Economics Journalism, and Public Relations, designed to meet needs of individuals.*

## Journalism Courses

1, 2, 3. **College Journalism.** For members of "Student Life" Staff. Discussions of newspaper and responsibilities of journalists. (1F, 1W, 1S) **Stewart**

4, 5, 6. **College Journalism.** Second year. (1F, 1W, 1S) **Stewart**

12. **Introduction to Journalism.** Lectures on historical, social and vocational aspects of the newspaper, magazine, book, radio, television,

motion picture, public relations, advertising, journalism teaching; also, the psychology of news. (3F) **Stewart**

13. **Reporting.** Continuation of 12 with emphasis on newspaper style, ethics, social responsibilities, and problems of reporting. Practical experience writing for newspapers. Prerequisite: Journ. 12. (3W) **Klages**

14. **Reporting. Continuation of 13.** Prerequisites: Journ. 12, 13. (3S) **Stewart**

16. **Copyediting.** Primarily a laboratory course in handling newspaper copy, headline writing, page layouts. Prerequisites: Journ. 12, 13, 14. (3F) **Stewart**

81. **Introduction to Radio and Television.** (See Speech Department for description.) (3F) **B. F. Hansen**

82. **Radio Speech.** (See Speech Department for description.) (3W) **B. F. Hansen**

83. **Elements of Broadcasting.** (See Speech Department for description.) (3S) **B. F. Hansen**

91. **Weekly Newspaper.** Problems of editing and publishing weeklies. Efforts are made to provide laboratory experience in a weekly. (3W) Taught alternate years. **Stewart**

92. **Weekly Newspaper Internship.** Six or more weeks' work in the summer on a weekly newspaper. Prerequisite: Journ. 91. (Time and credit arranged.) (Su) **Staff**

96. **Growth of Mass Media and Propaganda.** Development of American publications and electronic means of disseminating information and propaganda; also, main currents in thought conveyed by these media. (5S) **Culmsee**

**112. Writing Feature Articles.** Lectures and practice in preparing feature articles for newspapers and magazines. Analysis of periodicals is made to determine what editors buy. (3W) **Klages**

**114. Writing for Radio and TV.** Study and practice in writing for broadcasting. Taught alternate years. (3W) **Stewart**

**115. Law of the Press.** Law of libel, right of privacy, contempt of court, copyright, and postal regulations. Taught alternate years. (2W) **Culmsee**

**120. Journalistic Techniques.** For non-journalism majors. Techniques which aid professional people, extension workers and others in using newspapers, magazines, and radio and television for publicity and information purposes. Taught alternate years. (3F) **Stewart**

**125. Editorial Page.** A study of editorials and other elements of the modern editorial page, and the writing of editorials. (3F) **Culmsee**

**156. Principles of Advertising.** (See Business Administration Department, College of Business and Social Sciences, for description.) (5W) **Calder**

**164. Publicity Methods.** 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: Journ. 12, 13, 14 or permission of instructor. Taught alternate years. (3S) **Stewart**

**166. Journalism Practices.** Laboratory work in publications, radio or television. (2F, 2W, 2S) **Staff**

**182. Radio-TV News Writing and Casting.** Offered in both Speech and Journalism Departments. Principles of editing, organizing, writing and presenting news. Three periods a week devoted to discussion and practice in writing and arrangement; two periods a week in studios for analysis and presentation of news over the microphone. Taught alternate years. (5W) **B. F. Hansen, Stewart**

**185, 186, 187. Special Problems in Journalism.** (1 to 2F, 1 to 2W, 1 to 2S) **Culmsee**

**191. School Publications.** For the prospective teacher. Problems of advising staffs of school newspapers, yearbooks and magazines. (3S) **Staff**

## Photography and Photographic Journalism

DIRECTOR, UNIVERSITY PHOTOGRAPHIC SERVICE, *B. V. Allen.*

### Office in TG Building

For a major in Photography you must meet standard requirements of the University relative to lower and upper division courses, as well as completing each of the photography courses listed below, plus related courses in other departments. See Mr. Allen.

*For a major in Photographic Journalism,* you should study the following courses in addition to the Photography listed below: Journalism 12, 13, 14, 16, 112, 115 and 156 or 164.

General service courses are available for students desiring instruction in fundamentals of photogra-

phy. Some courses are designed especially for students of Agriculture, Engineering and Technology, Forest, Range and Wildlife Management, and other technical or professional subjects in which photography is highly useful.

### Photography Courses

**51. General Photography.** Training in selection and use of cameras, lenses, meters, films, filters, lights, developers, and accessories. Two lectures, one three-hour lab. (3F, W, S) **Allen**

**61. General Photography Laboratory.** Additional lab work to supplement Photography 51 for those desiring more than three credits of work. Two three-hour labs. (2F, W, S) **Allen**

**151. Photographic Problems.** Designed to help you solve advanced photographic problems. May be repeated provided that a different type of photographic work is taken each time you register. Repeating students must have approval of major professor and department head. Prerequisite: Photo 51. One lecture, two three-hour labs. (3F, W, S) Allen

**163. Commercial and Scenic Photography.** All types of outdoor photography, including scenic, agricultural, livestock, wildlife, and plant life. Suited to students in Forest, Range and Wildlife Management and Agriculture. Aerial photography is included. Prerequisite: Photo. 51. Two lectures, three three-hour labs. (5S) Allen

**165. Portrait Photography.** Portrait and group photography. Model directing, lighting, posing, head and shoulder, three quarter, full length, fashion, and group photography. Emphasis on child and home portraiture. Prerequisite: Photo. 51. Two lectures, three three-hour labs. (5W) Allen

**166. Color Photography.** Problems in color. Ektachrome, Anscochrome, and Ektacolor; use of tungsten, daylight and flash technique; printing processes; composition in color arrangement. Prerequisite: Photo 51. Three lectures, two labs. (5F) Allen

## Department of Environmental Planning and Landscape Design

PROFESSOR L. S. Morris, HEAD; ASSOCIATE PROFESSOR E. Defty.

### Office in Main 7

Environmental Planning and Design is concerned with the arrangement of land and the objects man places on it for use. The physical plan of the community, including rural areas as well as urban, is made a consideration of design. Functional qualities of a plan are given first consideration and the aesthetic qualities furnished by nature and added by man are integrated by design. Projects range from individual home grounds to complete cities and those facilities for work and play wherever their location.

**Bachelor of Science Degree.**—For a Bachelor of Science degree with a major in Environmental Planning and Design, you should take the following courses which provide: (1) Necessary instructional material directly concerned with Landscape Architecture and Planning; (2) supporting courses listed in fields which are closely related, such

as Civil Engineering, Visual Arts, Horticulture, and Botany; (3) courses required for a liberal education.

Freshman Year	Cr.
Elem. of Land Planning, L. A. 3 .....	3
Graphics, L. A. 20 .....	3
History and Lit. of Physical Plans, L. A. 30 .....	5
Theory of Design, L. A. 35 .....	3
Algebra, Math. 34, 35 .....	8
Trigonometry, Math. 46 .....	5
General Botany, Botany 24, 30 .....	10
English 1, 2, 3 .....	9
Visual Arts 1 .....	3
	49

Sophomore Year	Cr.
Plant Materials, L. A. 40, 41, 42 .....	9
Architectural Design, 60, 61, 62 .....	6
Physical Science 31, 32, 33 .....	9
Descriptive Geometry, C. E. 63 .....	3
Plane Surveying, C. E. 81, 82 .....	6
Engineering Drawing 94 .....	3
Sociology 70 .....	5
Soils, Agronomy 56 .....	4
Prin. & Prac. Floriculture, Hort. 10 .....	3
	48

## Junior Year

Design, L. A. 140, 141, 142 .....	9
Planting Design, L. A. 150, 151, 152 .....	6
Recreational Planning, L. A. 130 .....	2
City and Regional Planning 170 .....	3
Fundamentals of Speech, Sp. 1 .....	5
Visual Arts .....	6
English Composition .....	4
Economics 51, or Agr. Econ. 53 .....	5
Electives .....	6

Cr.

46

## Senior Year

Constr., 160, 161, 162 .....	9
Advanced Planning and Design, L. A. 180, 181, 182 .....	9
Sculpturing, Art 160 .....	3
Planning and Design 190 .....	6
Seminar 195 .....	1
Writing Feature Articles, Journalism 112 ....	3
Roads and Pavements, C. E. 120 .....	4
Electives .....	11

Cr.

46

## EP&LD Courses

**3. Elements of Land Planning and Design.** Relation of people to land regions and small areas. Principles of design and composition applied to various types of land planning. Design of home grounds is emphasized. Field trip required. (3F, S)

Morris

**20. Graphics.** Methods in instrumental drafting and perspectives, light and shade studies, architectural lettering, and general symbolic graphics necessary in professional practice. (3F, W)

Defty

**30. History and Literature.** The history of physical plans as related to the community and its parts. Design and planning in relation to land during the past 5,000 years. Emphasizes present age with implications of the future. (5W)

Morris

**35. Theory of Design.** Form in relation to vertical mass and horizontal space. Abstract design is studied and the resultant forms transposed into concrete space and mass relationships. The chief purpose is to provide you with an awareness of design as early as possible in your training. (3S)

Defty

**40, 41. Plant Materials.** The ecological, functional and aesthetic uses of native and cultivated woody and herbaceous plants for use on the land. Prerequisites: Botany 24, 30. (3F, 3W, 3S)

Defty

**60, 61, 62. Architectural Design.** The design, construction, and orientation of architectural structures as related to land areas. Prerequisites: L. A. 20, 35. (2F, 2W, 2S) Staff

**130. Park and Recreational Planning.** Analysis and development procedures in national, state, urban parks, forest lands, and private lands in terms of recreational and aesthetic values and uses. Field trip required. (2S) Staff

**135. Travel Course.** A major field trip to examine a variety of projects in planning and design. You are required to take this course at least twice during your training. Time and credit arranged. (F, W, S) Staff

**140, 141, 142. Design.** Introduction to the analysis and writing of design criteria and the design of private and public land areas. Theoretical and actual site problems are used. Prerequisites: L. A. 62 and C. E. 82. (3F, 3W, 3S) Staff

**150, 151, 152. Planting Design.** Pictorial compositions and planting plans developed together. Designed to develop your ability to visualize the finished landscape. (2F, 2W, 2S)

Morris

**160, 161, 162. Construction.** Master construction plans, grading, drainage, sprinkling systems, structures, cost estimates and specifications. (3F, 3W, 3S)

Morris

**170. City and Regional Planning.** An introduction to the scope and methods of city and regional planning. Legislative, administrative, and effectuation of the general interim plan. The physical aspects of town and city are further pursued in all design classes. (3W)

Defty

**180, 181, 182. Advanced Planning and Design.** Design of subdivisions, housing projects, public grounds, parks, cemeteries, building groups and recreational areas on various types of topography. (3F, 3W, 3S)

Morris

**190. Special Problems.** Selected problems to meet your individual needs in completing your training. Registration by permission only. Time and credit arranged. (F, W, S)

Staff

**195. Seminar.** Readings and reports on current topics and trends in Landscape Architecture. Required of senior students. (1W)

Morris

**210. Advanced Problems in Design and Planning.** Time and credit arranged. (F, W, S)

Staff



# Department of Geology

PROFESSOR *J. S. Williams*, HEAD; ASSOCIATE PROFESSOR *C. T. Hardy*; ASSISTANT PROFESSOR *D. R. Olsen*.

Office in Main 286

**Bachelor of Science Degree.** For a major in Geology you must satisfactorily complete the following basic courses: Chemistry 10, 11, 12; Civil Engineering 84; Engineering Drawing 61, 63; English 111; Geology 3, 4, 5, 101, 102, 106, 108, 110, 111, 113, 114, 115; Mathematics 35, 46; Physics 17, 18, 19; and Zoology 3. Recommended electives are Mathematics 97, 98, 99; German 1, 2, 3; Civil Engineering 181; Photography 51; Chemistry 3, 4, 5; and Physics 20, 21, 22.

**Geology Club:** The Geology Club, under general supervision of the department, is an organization for all geology majors. Meetings are held twice each month and programs consist of lectures by professional geologists. Two field trips are conducted each year. Regular attendance is required of all majors; all interested persons are invited to attend.

**Field Trips:** Majors should reserve Saturdays during Fall and Spring quarters for field trips.

## Graduate Study

**Master of Science Degree.** The Department of Geology offers advanced study and research leading to the Master of Science degree. Graduate students of other departments may take any course in the 100 series for credit.

## Geology Courses

**1. Introductory Physical Geology.** For students in non-science areas. (5F, W, S) **Hardy**

**3. Physical Geology.** For students in Geology, Forestry, Engineering, Agronomy, or other sciences. (5F, W, S) **Olsen**

**4. Historical Geology.** Physical history of the Earth and the development of life as indicated by the geologic record. (5F, W, S) **Hardy**

**5. Minerals and Rocks.** Identification of common minerals and rocks. Prerequisite: Geology 3. (3S) **Olsen**

**31, 32, 33. Physical Science.** Principles essential to understanding the physical universe. Elements of astronomy, chemistry, geology, mathematics and physics integrated for use in interpreting human experience. Meets the physical science group requirement only upon completion of sequence. (3F, 3W, 4S) **Olsen**

**101. Mineralogy.** Identification of minerals by physical and chemical tests. Elementary crystallography. Prerequisites: Geology 3 and Chem. 10, 11, 12. (5F) **Olsen**

**102. Optical Mineralogy and Petrography.** Determination of minerals by using the petrographic microscope. Classification of igneous rocks. Prerequisites: Geology 101 and Physics 19. (5W) **Olsen**

**103. Engineering Geology.** Application of geology to engineering problems. For seniors in Engineering. (3S) **Williams**

**106. Invertebrate Paleontology.** Introduction to the study of invertebrate fossils. Methods of preparation. Prerequisites: Geology 4 and Zoology 3. (5S) **Williams**

**108. Stratigraphy and Sedimentation.** Prerequisite: Geology 3. (5W) **Hardy**

**110. Structural Geology.** Prerequisite: Geology 3. (5F) **Hardy**

**111. Petroleum Geology.** Accumulation and origin of petroleum. Subsurface methods utilized in exploration. Prerequisites: Geology 108, 110. (5S) **Hardy**

**113. Economic Geology.** Geologic occurrence of metallic and non-metallic mineral deposits. Prerequisites: Geology 101, 110. (5S) **Olsen**

**114. Geologic Field Methods.** Preparation of geologic and topographic maps utilizing the plane table. Measurement of stratigraphic sections. Survey of geophysical techniques. Prerequisites: Geology 3 and Civil Engineering 84. (5S) **Hardy**

115. **Advanced Physical Geology.** Processes of erosion. Action and development of streams. Land forms. Subsurface water. Prerequisites: Geology 3, college mathematics, chemistry, and physics. (5F) **Williams**

116. **Special Problems.** Directed study of selected problems. Written report required. (1 to 6F, W, S) **Staff**

117. **Ground-Water Geology.** Geologic conditions that control the occurrence and purity of ground water with special reference to western United States. Prerequisite: Geology 3. (4W) **Williams**

118. **Geologic Field Course.** (8Su) **Staff**

210. **Graduate Seminar.** (2 to 5F, W, S) **Staff**

212. **Stratigraphic Paleontology.** (3F) **Williams**

213. **Paleozoic Stratigraphy.** (3W) **Williams**

214. **Mesozoic and Cenozoic Stratigraphy.** (3S) **Hardy**

215. **Regional Tectonics.** (3W) **Hardy**

216. **Petrography.** (3S) **Olsen**

217. **Petrogenesis.** (3F) **Olsen**

220. **Thesis.** (5 to 15F, W, S) **Staff**

# Department of Languages

## (Languages and Philosophy)

PROFESSORS *M. L. Nielsen*, HEAD, *G. A. Meyer*; ASSOCIATE PROFESSORS *T. Fogelberg*, *A. Thain*; ASSISTANT PROFESSORS *J. M. Beyers*, *G. E. Porter*.

### Office in Main 360-C

*Languages.* — Elementary language courses train you in the basic grammatical structure of the foreign language and develop your ability to read the language. Correct pronunciation is emphasized, and one of the major objectives of the elementary work is to assist you in acquiring the ability to speak the language.

No credit in a beginning language may be used toward graduation until at least 15 credits have been accumulated.

*Bachelor of Science Degree.* You can obtain a Bachelor of Science Degree with a Language major in either French or German. The following Language courses are required:

*In French:* French 1, 2, 3, 4, 5, 6, 105, 110, and fifteen credits in courses numbered above 110.

*In German:* Forty-five credits including courses 1, 2, 3, 4, 5, 6, 105, 125, and fifteen credits in other courses numbered above 105.

*Minor in a Language:* Twenty-four credits are required for a minor in a language. You will not be recommended by the department for a teaching minor in any language unless you have completed at least 24 credits of approved courses in that language.

*Language credit by special examination*—If you have acquired a working knowledge of a foreign language by residence abroad you may obtain a maximum of 15 credits in that language by taking a special examination. Such an examination is given only in those languages in which the department has an instructor competent to examine you. At present, examinations may be taken in French, German, Spanish, Portuguese, Danish, Norwegian, Swedish, and Dutch.

In addition to the elementary courses listed below, permissible special examination credit would be listed as Norwegian 1, 2, 3; Swedish 1, 2, 3; Danish 1, 2, 3; Dutch 1, 2, 3.

## Language Courses

### French

**1A, 2A. Elementary French.** Intensive course.  
Two hours daily. (7F, 7W) **Meyer**

**1, 2, 3. Elementary French.** (5F, 5W, 5S) **Staff**  
**101A. Intermediate French.** Intensive course.  
(5S) **Meyer**

**102A. Intermediate French.** (3F) **Meyer**  
**4, 5, 6. Intermediate French.** (3F, 3W, 3S)  
**Thain**

**105. Advanced Composition and Conversation.**  
(3W) **Fogelberg**

**106, 107, 108. Selective Readings.** Readings  
and reports in various subjects, scientific or  
literary. Prerequisite: French 5 or equivalent.  
(1 to 2F, 1 to 2W, 1 to 2S) **Staff**

**109. French Short Story.** Studies of the French  
Conte as a literary form. Serves as an intro-  
duction to literary movements in France.  
Emphasizes the 19th century. (3S) **Meyer**

**110. French Phonetics.** Principles of French  
pronunciation and their practical application.  
(3F) **Meyer**

**112. Nineteenth Century French Poetry.** (3W)  
**Thain**

**115, 116, 117. French for Graduate Students.**  
Short, basic course designed to give graduate  
students a reading knowledge of French as  
a help in passing advanced degree language  
requirements. (3F, 3W, 3S) **Staff**

**120. Comedies of Moliere.** Moliere's plays as  
social criticism. (3F) **Meyer**

**121. French Classic Drama.** Plays of Corneille  
and Racine. (3W) **Staff**

**122, 123. Nineteenth Century French Drama.**  
Romantic and Realistic Schools. (3W, 3S)  
**Fogelberg**

**125, 126. Survey of French Literature.** (3W,  
3S) **Thain**

**129, 130. French Literature of the 18th Cen-  
tury.** Emphasizes the philosophy of the period  
—Voltaire, Rousseau, Buffon, Diderot. (3F,  
3W) **Meyer**

**131. Comedies of Beaumarchais and Marivaux.**  
(3S) **Staff**

**135, 136, 137. Nineteenth Century French Nov-  
el.** (3F, 3W, 3S) **Fogelberg**

### German

**1A, 2A. Elementary German.** Intensive course.  
Two hours daily. (7F, 7W) **Staff**

**1, 2, 3. Elementary German.** (5F, 5W, 5S)  
**Staff**

**101A. Intermediate German.** Intensive courses.  
(5S) **Staff**

**4, 5, 6. Intermediate German.** (3F, 3W, 3S)  
**Staff**

**105. Advanced Composition and Conversation.**  
(3W) **Staff**

**106, 107, 108. Selective Readings.** Readings and  
reports in various subjects, scientific or liter-  
ary. Prerequisite: German 5 or equivalent.  
(1 to 2F, 1 to 2W, 1 to 2S) **Staff**

**110, 111, 112. Scientific German.** Reading of  
scientific texts. Reports. Prerequisite: Ger-  
man 4 or equivalent. (2F, 2W, 2S) **Staff**

**120. Die deutsche Novelle im 19. Jahrhundert.**  
Reading and discussion of representative stor-  
ies by Hauff, Storm, Meyer, Keller and others.  
(3F) **Nielsen**

**121. Lessing—Plays and Biography.** (3)  
**Nielsen**

**122. Schiller—Poetry, Plays and Biography.**  
(3S) **Nielsen**

**123. Die deutsche Novelle im 20. Jahrhundert.**  
Representative stories by Thomas Mann, Her-  
man Hesse, Arthur Schnitzler and others.  
(3W) **Staff**

**125. Survey of German Literature.** From ear-  
liest times to the age of Goethe and Schiller.  
(3W) **Staff**

**130. Goethe's Faust.** Prerequisite: Two years of  
College German or equivalent. (3W) **Staff**

**131. Goethe's Prose.** Werther, Dichtung und  
Wahrheit, and selections from Wilhelm Meis-  
ter. Reading of a biography of Goethe. (3S)  
**Staff**

**132. Heine's Poetry and Prose.** (3S) **Nielsen**  
**133. German Drama of the Nineteenth Cen-  
tury.** Rapid reading and discussion of repre-  
sentative plays from Kleist to Hauptmann.  
(3W) **Staff**

**150. Phonetics and conversation.** Especially  
for returned missionaries and others who have  
experience with the language abroad. (3F)  
**Nielsen**

153. **Thomas Mann—Novels, Novellen and Essays.** His life and philosophy. The course is conducted in English and readings are in translation. Either German or English credit is given. (3S) **Nielsen**

## Greek

1, 2, 3. **Elementary Greek.** (5F, 5W, 5S) **Meyer**

## Latin

1, 2, 3. **Latin.** Emphasizes the relation of Latin to English. Study of vocabulary and word-formation as an aid to better comprehension of English. Recommended for English majors and for pre-law and pre-medical students. Includes readings from Caesar. (5F, 5W, 5S) **Thain**

4, 5, 6. **Intermediate Latin.** Readings from the orations of Cicero and Vergil's Aeneid. Miscellaneous readings from other Roman authors. Open to students who have had one year of college Latin or two years of high school Latin. (3F, 3W, 3S) **Nielsen**

104, 105, 106. **Selective Readings in Latin.** (2F, 2W, 2S) **Nielsen**

## Portuguese

1, 2, 3. **Portuguese.** Grammar, dictation conversation and reading. (5F, 5W, 5S) **Meyer**

4, 5, 6. **Second Year Portuguese.** Grammar, reading, conversation, composition. Credit arranged. (F, W, S) **Meyer**

106, 107, 108. **Selective Readings.** (1 to 2F, 1 to 2W, 1 to 2S) **Meyer, Porter**

## Russian

1, 2, 3. **Elementary Russian.** (5F, 5W, 5S) **Staff**

## Spanish

1A, 2A. **Elementary Spanish.** Intensive course. Two hours daily. (7W) **Staff**

1, 2, 3. **Elementary Spanish.** (5F, 5W, 5S) **Fogelberg, Porter**

4, 5, 6. **Intermediate Spanish.** (3F, 3W, 3S) **Porter**

101A. **Intermediate Spanish.** Intensive Course. (5S) **Fogelberg**

105. **Advanced Composition and Conversation.** (3W) **Fogelberg**

106, 107, 108. **Selective Readings.** Readings and reports in various subjects, scientific or literary. Prerequisite: Spanish 5 or equivalent. (1 to 2F, 1 to 2W, 1 to 2S) **Porter**

125. **Survey of Spanish Literature.** (3F) **Fogelberg**

## Courses for Foreign Students

30. **English Phonetics for Foreign Students.** To train you in the sounds of English, and to increase your ability to speak with the rhythm and intonation of American English. May be taken in conjunction with L. 31. (3F) **Meyer**

31. **English for Foreign Students.** Structure of the language, with exercises and drills for increasing comprehension and ability to write accurately. Required of all foreign students who have failed to make required scores on English proficiency examinations on entering college. It may be used as an elective by others. (3F) **Meyer**

32. **English for Foreign Students.** Advanced Grammar. (3W) **Meyer**

## Philosophy

Before registering for upper division Philosophy listed below you should already have completed ten credits in related subjects in the Humanities: Literature, History, Political Science, or Sociology.

## Philosophy Courses

34, 35, 36. **Great Books and Ideas.** (3F, 3W, 3S) See English Department. **Rice**

45. **Introduction to Problems of Philosophy.** (5S) See English Department. **Hayward**

140. **History of Ancient Philosophy.** The development of philosophical thought in the ancient Greek world. Emphasizes reading from the Pre-socratics, Plato, Aristotle, the Stoics and Epicureans. (3F) **Beyers**

141. **History of Early Modern Philosophy.** European thought from the Renaissance through the 18th Century, indicating the relationship of philosophic ideas to science, religion and society. Readings in the metaphysics, logic, value theory, and theory of knowledge of Descartes, Hobbes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant. (3W) **Beyers**

142. **History of Nineteenth Century Philosophy.** European thought from Kant to Nietzsche, indicating the relationship of philosophic ideas to science, religion, and society. Readings in the metaphysics, value philosophy, logic, and theory of knowledge of such thinkers as Bentham, Mill, Comte, Hegel, Schopenhauer, Marx, and Nietzsche. (3S) **Beyers**

## Philosophical Literature

The following courses have been gathered from various departments. The major part of their content is philosophical. They are assembled here for the convenience of students interested in the interpretations which philosophers and scientists have made of man and his place in the universe. They afford opportunities for both teacher and student to apply philosophical principles to the solution of problems in various fields of human thought and action.

*In many other courses* in History, Political Science, and Literature the philosophical content is rich. Such courses as Ancient World Civilizations and Modern World Civilizations (History 4 and 5) are invaluable to one wishing to understand the development of human thought.

It is recommended that you take advantage of the instruction in religious philosophy offered by churches in Logan. Of such courses, those classed as non-secular yield University credit.

## Philosophical Literature Courses

**English 46. The Bible as English Literature.** Provides an opportunity for firsthand acquaintance with the great book of books. (5S) Staff

**English 48. Modern European Literature.** (See English Department).

**English 58. Modern American Literature.** (See English Department)

**English 68. Modern English Literature.** (See English Department.)

**Zoology 107. History of Biology.** Important men and ideas in the historical development of biology. (4F) Gardner

**Political Science 117, 118, 119. American Political Thought.** A survey of American political ideas and the men who developed them. The historical approach is used, beginning in Colonial times and carrying the development of American political thought through to the present. Emphasizes ideas significant in shaping the form and actions of American government today. You may register for one, two, or three quarters. (2F, 2W, 2S) Harmon

**Zoology 131. Organic Evolution.** Critical study of the facts of evolution as obtained from consideration of comparative anatomy, embryology, geographical distribution, blood tests, and other factors upon which the doctrine of evolution is based. Factors causing evolution are considered and discussions undertaken on other bodies of related thought. Prerequisite: Zoology 1 or 2, or 3 and 4. (3W) Gardner

**English 134. Literary Criticism.** Masterpieces of criticism from Plato and Aristotle to Croce, studied to develop an awareness of critical standards throughout the ages. (4S) Edwards

**Political Science 145, 146, 147. History of Political Thought.** No. 145 covers political thought from its beginnings in the Greek period to Machiavelli. No. 146 continues the study from Jean Bodin to Bentham. No. 147 emphasizes the modern period and gives consideration to democratic, fascist, and communist theories. (3F, 3W, 3S) Harmon

**English 147, 148, 149. Comparative Literature.** (See English Dept.)

**History 175. History of American Democratic Thought.** From the Revolutionary War to the present. (3W) Ricks

*We learn only by a period—and usually a long period—of repetitive doing.*



# Department of Mathematics

## (Mathematics and Mathematical Statistics)

PROFESSORS *N. C. Hunsaker*, HEAD, *V. H. Tingey*, EMERITUS; ASSOCIATE PROFESSORS *J. Elich*, *M. Nelson*; ASSISTANT PROFESSORS *R. G. Hammond*, *W. R. Rich*.

### Office in Main 126

*Two majors are offered by the Mathematics Department, for a Bachelor of Science degree. If you intend to enter graduate study in mathematics, to teach mathematics in a junior college or a university, or to enter industrial employment as a mathematician you should take the regular major. If you intend to teach mathematics in an elementary or secondary school you may elect to fill the requirements for a teaching major.*

*For a regular major you are required to complete Mathematics 130, 131, 132, and fifteen additional credits of upper division mathematics. If you expect to do graduate work you should have a reading*

*knowledge of French or German. Physics 20, 21 and 22 are required, and nine credits of upper division physics are recommended.*

*A department-approved teaching major must include nine credits of upper division mathematics. It is recommended that the teaching major include Mathematics 60, 119, 150.*

*A department-approved teaching minor must include Mathematics 98 and 99 or 98, 60 and 150.*

*As a major in Mathematics you must have had plane and solid geometry. Plane geometry is a prerequisite for all university mathematics except Mathematics 20, 34, 35 and 60.*

## Mathematics Courses

H.S. 42. Plane Geometry (F, W; no credit).

Staff

20. Elementary Mathematical Concepts. For prospective teachers in the elementary schools. (5F, W, S)

Staff

33. Solid Geometry. Prerequisite: Math 34 or equivalent. (2S)

Staff

34. Introduction to College Algebra. Prerequisite: One year of high school algebra. It is recommended that students with more than one year of high school algebra register for Math 35. Daily. (3F, W, S)

Staff

35. College Algebra. Prerequisite: 34. (5F, W, S)

Staff

44. Plane Trigonometry. Prerequisite: 35. (3F, W, S)

Staff

46. Plane and Spherical Trigonometry. Prerequisite: 35. (5F, W, S)

Staff

50. Descriptive Astronomy. (3S)

Staff

60. Mathematics of Finance. (3S)

Staff

97. Plane and Solid Analytical Geometry. Prerequisite: 44 or 46. (5F, W, S)

Staff

98. Differential Calculus. Prerequisite: 97. (5F, W, S)

Staff

99. Integral Calculus. Prerequisite: 98. (5F, W, S)

Staff

110. Calculus and Differential Equations. Prerequisite: 99. (5F, W, S)

Staff

118. Modern Algebra. Prerequisite: 99. (3S)

Staff

119. Theory of Equations. Prerequisite: 99. (3 not offered 1958-59)

Staff

120. Modern Geometry. Prerequisite: 99. (3 not offered 1958-59)

Staff

122. Ordinary Differential Equations. Prerequisite: 99. (3SS)

Staff

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123. Number Theory. Prerequisite: 99. (3W) Staff	246. Tensor Analysis. Prerequisite: 145. (3 not offered 1958-59) Staff
124. Foundations of Mathematics. Prerequisite: 99. (3 not offered 1958-59) Staff	254. Theory of Function. Prerequisite: 132. (3F) Staff
130. Advanced Calculus. Prerequisite: 110. (3F) Staff	255. Theory of Functions. Prerequisite: 254. (3W) Staff
131. Advanced Calculus. Prerequisite: 130. (3W) Staff	256. Theory of Functions. Prerequisite: 255. (3S) Staff
132. Advanced Calculus. Prerequisite: 131. (3S) Staff	257. Advanced Applied Mathematics. Prerequi- site: 132 Staff
145. Vector Analysis. Prerequisite: 99. (3W) Staff	258. Advanced Applied Mathematics. Prerequi- site 257. Staff
150. The Teaching of Mathematics in the Sec- ondary Schools. (3S) Staff	259. Advanced Applied Mathematics. Prerequi- site 258. Staff
153. Mathematical Readings. Prerequisite: 99. (3 not offered 1958-59) Staff	260. Graduate Thesis. Time and credit ar- ranged. (F, W, S) Staff

## Mathematical Statistics

*You can get a Bachelor of Science in Mathematical Statistics.* The work in Mathematical Statistics has a three-fold purpose: (a) To train professional statisticians. (b) To instruct students who wish to broaden their mathematical studies or who seek a mathematical background for studies in economics, sociology, genetics, biometry, psychology and education. (c) To conduct research in statistics and train competent consultants on statistical problems.

Mathematics 99 or its equivalent is required of all students taking statistics.

If you wish to major or minor in

statistics, take the courses 160 to 167 inclusive in Statistics, plus Mathematics 110, 130, 131, and 132.

## Statistics Courses

160. Determinant and Matrix Theory. (3S) Staff
161. Calculus of Probability. Prerequisite: 99. (5F) Staff
162. Mathematics of Statistics. Prerequisite: 99. (5W) Staff
163. Mathematics of Statistics. Prerequisite: 162. (5S) Staff
166. Sequential Analysis and Control of Qual- ity of Output in Manufacturing. Not Offered 1958-59. (3S) Staff
167. Statistical Reading and Reports. Not of- fered 1958-59. (3S) Staff

*The predominant need of higher education is the need for moral leadership.*

# Department of Physics

PROFESSOR J. K. Wood, HEAD; ASSISTANT PROFESSORS R. L. Berger, J. D. Chatelain, J. O. Jensen.

Office in Widtsoe Hall 101

*Bachelor of Science Degree.* Requirements for a Physics major: Forty-five credits, of which thirty credits must be upper division courses. Certain approved courses in upper division Engineering, not to exceed ten credits, may be counted. The following sequence of courses is recommended if you wish to continue in graduate study in physics:

Freshman Year: Mathematics 35, 46, 97; Chemistry 3, 4, 5; English 1, 2, 3; group electives.

Sophomore Year: Physics 20, 21, 22; Math 98, 99, 100; German or French, or group electives.

Junior Year: Physics 120, 121, 130, and 175, 176, 177 or 153, 154; Math 122, 145; group electives.

Senior Year: Physics 153, 154, or 175, 176, 177, and 185, 186, 187, 193, 194, 195; one other year-long course in Physics; Math 130, 131, 132; Chem. 104, 105, 106; language group electives.

A *minor in physics* will be approved on completion of nine credits from the following upper division Physics courses: 107, 115, 120, 121, 130.

*Teaching Major:* If you desire a teaching major in Physics or a composite teaching major in Physics and Math, you should complete the following minimum program: Physics 17, 18, 19, 120, 121, 130, three credits in 188; Math 35, 46, 97, 98, 99, 110. Required professional education courses for the teaching certificate are listed in the College of Education.

## Graduate Study

*Master of Science Degree.* As a candidate for the degree of Master of Science in Physics you must present general Physics, general Chemistry, Calculus, one additional year of Mathematics and upper division courses in five of the following areas: Mechanics, Heat and Thermodynamics, Geometrical and Physical Optics, Electricity and Magnetism, Modern and Nuclear Physics, Meteorology, Physical Chemistry, Electronics, Sound. If you have fewer than six credits in certain of these five fields, you may be requested to take additional work in those areas as part of the work for the Master's degree.

*Doctor of Philosophy Degree.* The Physics department in cooperation with related departments offers the Doctor of Philosophy Degree. Detailed information may be obtained from the department or from the dean of the School of Graduate Studies.

## Physics Courses

**3. Introductory Physics.** A non-technical course for students who do not expect to major in sciences but who want understanding of fundamental physical principles and applications. (5F, W, S) **Staff**

**6, 7. General Physics.** Physics 6 covers mechanics, constitution of matter, heat, and meteorology. Physics 7 emphasizes electricity and magnetism, with a survey of light and sound. Primarily designed for students in Forestry and Agriculture. (Physics 6, 5F, W, S; Physics 7, 5 credits, given on sufficient demand) **Staff**

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**16. Introductory Meteorology.** A non-mathematical treatment of physical laws governing the atmosphere and its phenomena. Brief study of the polar-front theory, air-mass analysis, weather map reading, forecasting, and information required by the Civil Aeronautics Adm. for flying. (3F) **Jensen**

**17, 18, 19. Mechanics. Electricity and Magnetism. Heat, Sound and Light.** For Pre-Medical, Pre-Dental, Agricultural and Technology majors. Prerequisite: Math 44 or 46. Should be taken in sophomore year, and in the sequence indicated, except with permission of instructor. Two lectures, and three recitation periods per week. (5F, 5W, 5S) **Berger**

**20, 21, 22. Mechanics. Electricity and Magnetism. Heat, Sound and Light.** For Science majors and Engineers. Prerequisite: Math 97 or approval of instructor. Concurrent or previous registration for calculus desirable. To be taken in sequence except with permission of instructor. Should be taken in the sophomore year. Two lectures, one lab and three recitation periods per week. (5F, 5W, 5S) **Staff**

**31, 32, 33. Physical Science.** Principles essential to understanding the physical universe. Elements of astronomy, chemistry, geology, mathematics, and physics integrated for use in interpreting human experience. Intended to meet the physical science group requirements upon completion of three quarters' work. (3F, 3W, 3S) **Staff**

Calculus and Physics 17, 18, 19 or 20, 21, 22 are prerequisite for all courses numbered above 100 except 107 and 115.

**117. General Meteorology.** Physics of the Air. Atmosphere physics and weather phenomena, using both dynamic and synoptic procedures. Brief study of meteorological apparatus, observations, map reading, forecasting, and basic principles of aeronautical meteorology. Prerequisites: Physics 19 or 22 and Calculus. Four lectures, one lab. (5S) **Jensen**

**120, 121. Modern Physics.** A study of electrons, ions, atomic structure and radiation. (3F, 3W) **Staff**

**130. Nuclear Physics.** A survey of methods and results of recent investigations of nuclear processes. To follow Physics 121. (3S) **Staff**

**140. Biophysics.** Principles of electricity, light, X-rays and radioactivity as related to studies in biology. (3S) **Staff**

**146. Sound.** An intermediate course in sound and vibration. (3S) **Wood**

**153, 154. Analytical Mechanics.** Prerequisite: Differential Equations. (3F, 3W) **Staff**

**160, 161, 162. Heat; Thermodynamics; Kinetic Theory.** (3F, 3W, 3S) **Staff**

**166, 167. Geometrical and Physical Optics.** (3F, 3W) **Staff**

**175, 176, 177. Electricity and Magnetism.** Electrostatics, magnetostatics, D.C. and A.C. circuits, electromagnetism, and electromagnetic theory. Use of the calculus and differential equations. Not taught 1958. (3F, 3W, 3S) **Staff**

**188. Special Problems in Experimental Physics.** A laboratory course to give the advanced student experience with precision measuring instruments and their use in physics. Measurements in electricity and magnetism, heat, optics, spectroscopy, atomic physics, nuclear physics and biophysics. (1 to 3F, 1 to 3W, 1 to 3S; 12 hours maximum credit) **Staff**

**193, 194, 195. Seminary in Physics.** A weekly meeting of staff and physics majors, consisting of reports on recent developments in physics. Students receive credit for course by making reports. All upper division physics majors are expected to attend whether registered for this course or not. (1F, 1W, 1S) **Staff**

**196, 197, 198. Selected Reading in Physics.** (1F, 1W, 1S) **Staff**

Courses numbered above 200 may be taken by undergraduates only with the approval of the instructor and the head of the department.

**210, 211. X-Ray Diffraction; X-Ray Crystallography.** (3W, 3S) **Staff**

**214. Soil Physics.** (See Agronomy 214.)

**220, 221, 222. Atomic Spectra, Molecular Spectra, and Spectroscopic Measurements.** (5F, 5W, 5S) **Staff**

**230, 231, 232. Nuclear Physics.** (3F, 3W, 3S) **Staff**

**250. Research in Physics.** Credit arranged. (F, W, S) **Staff**

**285, 286, 287. Introductory Quantum Mechanics.** Prerequisite: Advanced Calculus. (3F, 3W, 3S) **Staff**

**290, 291, 292. Theoretical Physics.** (3F, 3W, 3S) **Staff**

**293, 294, 295. Graduate Seminar in Physics.** (1F, 1W, 1S) **Staff**

# Department of Speech

PROFESSORS *C. J. Myers*, HEAD, *R. E. Robinson*; ASSOCIATE PROFESSOR *B. F. Hansen*; ASSISTANT PROFESSORS *P. Newman*, *G. Thornley*.

Office in Main 123

*Bachelor of Science Degree.* The Department of Speech offers training in Interpretation, Public Address, Radio and Television Broadcasting, and Speech Pathology. The requirements of 45 credits for a *departmental major* or a *teaching major* in Speech are as follows: Public Speaking, eight credits (Speech 125 required of all majors); Interpretation, eight credits (Speech 124 required of all majors); Theatre Arts, eight credits. (Theatre Arts 30 and 50 required of all majors); Speech Correction, five credits (Speech 167 required of all majors); Radio and Television, six credits (Speech 181 required of all majors); elective courses in Speech, ten credits. In addition, courses in Dramatic Literature, five credits, and Teaching of Speech, two credits, are recommended in some cases. English 163 and 168 may be used for credit toward the department requirement in Dramatic Literature.

If you are emphasizing speech correction and desire to comply with minimum standards for certification you must satisfactorily complete the following speech courses: 7, 111, 167, 169, 171, 173, 175, 177. An additional fourteen quarter hours in psychology are required, including Child Psychology or Child Development, Mental Hygiene, and Psychology of the Exceptional Child.

*For a composite English-Speech major*, you must have the following speech courses: Public Speaking, eight credits; Interpretation, eight credits; Theatre Arts, eight credi-

its; Speech Correction, five credits; Radio, three credits; Teaching of Speech, two credits. For a distribution of these courses see first paragraph above. For English courses needed for the English-Speech composite major see English Department in this catalog.

*For a composite Speech-Theatre Arts major*, you must have the following speech courses: Public Speaking, eight credits; Interpretation, eight credits; Speech Correction, five credits; Radio, three credits; Teaching of Speech, two credits; Elective speech courses, eight credits. For a distribution of these courses see first paragraph above. For Theatre Arts courses needed for the Speech-Theatre Arts composite major see Fine Arts Department: Theatre Arts, in this catalog.

## Graduate Study

*Master of Science Degree.* The Department of Speech offers a Master of Science degree in the following fields: Interpretation, Public Address and Broadcasting.

The following speech courses may be used for graduate credit by students majoring in the Speech Department or by students in other departments: 110, 111, 123, 124, 125, 171, 173, 181, 182, 184, 185, 186, 190.

## Speech Courses

1. **Public Speaking.** Elementary training in public speaking. Includes training in daily speaking situations and in voice improvement. Clinic assistance available if you need it.



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Time for clinical assistance to be arranged. No credit if you have taken English 1, 2, 3. (5F) Staff

**3. Practice in Speaking.** For students whose experience in Basic Communications or previous speech classes indicates deficiencies in such areas as adjustment to the audience situation, bodily action, varied and vigorous use of voice, oral grammar, or other aspects of speech delivery. Prerequisite: consent of instructor. (3F, W, S) Thornley

**4. Principles of Reading.** Effective oral and silent reading. A preparatory course for understanding and appreciation of the printed page. (5F, W, S) Thornley

**7. Voice and Phonetics.** Analyzes acoustical, anatomical and phonetic components of speech. Taught alternate years. (3W) Newman

**12. Individual Problems.** Individual attention given in private to your needs in an effort to eliminate defects and develop skill in speech. Recommended for anyone needing individual speech instruction and for speech majors. Special fee. May be taken more than one quarter. Credit arranged. (F, W, S) Staff

**16. Dialect.** The most prominent dialect forms, their principles and uses. The dialect work of Burns, Kipling, Drummond, Riley, Dunbar, Harris, Kirk and other writers are studied. Taught alternate years. (3S) Myers

**21. Intermediate Public Speaking.** You work with types of speaking most interesting and useful to you. You determine length of speeches and times to speak, within the framework of certain minimum requirements. Emphasizes developing skill in speech presentation. Prerequisite: Speech 1 or English 1, 2 and 3. (3F, W, S) Staff

**24. Oral Interpretation.** Lecture and Recital. Various literary forms are studied for platform presentation. Reading from manuscript and from memory. Preparation and presentation of public recital in reading. (3F) Myers

**75. Remedial Speech.** For persons with a noticeable difficulty in speech: in articulation, quality, pitch, intensity, stuttering, or rhythm. Time and credit arranged. Consult instructor before registering. May be taken more than one quarter. (F, W, S) Newman

**81. Introduction to Radio and Television.** Radio and TV station and network organization, operations, and programming. Attention given to developing an understanding of radio and TV as factors in social organization, and to develop appreciation in selection of programs. (3F) Hansen

**82. Radio-TV Speech.** Analysis and development of speech skills and speech forms used in radio and TV. Development of acceptable standards of voice articulation and pronunciation for broadcasting. Hansen

**83. Elements of Broadcasting.** The elements of program construction with practice in each. Writing and microphone presentation of radio and television commercial continuity, news, musical programs, interviews, discussions and simple dramas. (3W) Hansen

**84. Studio and Control Room Operations.** Basic studio and control room operations by the announcer in radio stations. Information is basic for producers, announcers, and educators who use radio. One hour lecture and two hours of lab. per week. (2F) Hansen

**105. Technical and Professional Speaking.** Meets speech needs of technically trained and professional people. Speaking experiences such as those encountered in career situations. Prerequisite: Speech 1 or English 1, 2 and 3. (3F, W, or S) Staff

**107. Speech Hygiene.** (3Su) Newman

**109. Public Discussion.** Application of various group discussion techniques to current problems. Efforts are made to have some discussions presented to various civic and religious organizations, or to release them over a commercial radio station. (3S) Robinson

**110. Play Reading.** Attention given to cutting and building for public programs. Taught alternate years. (3W) Myers

**111. Psychology and Semantics of Speech.** Principles of psychology which underlie speech. An insight into the processes of symbol use. Taught alternate years. (3S) Newman

**112. Private Instruction.** Individual attention given in private to your needs in an effort to eliminate defects and develop skill in speech. Recommended for anyone needing individual speech instruction and to speech majors. Special fee. May be taken more than one quarter. Credit arranged. (F, W, S) Staff

**113. Argumentation.** Information and practice in techniques of analysis, investigation, evidence, reasoning, brief making, refutation, and construction and delivery of the argumentative speech. (3F) Robinson

**114. Writing for Radio and Television.** (See Journalism) (3S)

**115. Intercollegiate Debating.** Members of debating squads may receive not more than three credits in any one year. (3F, W, S) Robinson

**118. Story-Telling.** Analysis and classification of typical stories with reference to periods of the child's development. Consideration is given stories of western pioneer life. Especially for the student teacher, recreation leader, church activity leader, librarian, and parent. (5F, W, S) **Myers**

**123. Teaching of Speech.** Methods and problems peculiar to the teaching of speech. Organization of courses and lesson plans is included. Prerequisite: consent of instructor. (2S) **Myers**

**124. Advanced Interpretation.** The mastering of significant selections from great writers. Reading from manuscript and from memory. (5S) **Myers**

**125. Speech Composition.** Advanced theory and practice of public speaking. You build and deliver several short speeches and read selected masterpieces from the world's public speaking literature. Prerequisite: Sophomore standing and Speech 1, or English 1, 2, 3. (5W) **Robinson**

**167. Introduction to Speech Correction.** Factors conducive to normal and abnormal speech development in the child. Attention given to problems of articulation disorders and stuttering. Recommended for prospective elementary school teachers. (5F) **Newman**

**169. Speech Pathology I.** Functional and organic voice defects studied. Cleft palate speech problems considered. Some attention given to the acquisition of substitute voice such as esophageal speech. Prerequisite: Speech 167. Taught alternate years. (5W) **Newman**

**171. Speech Pathology II.** Lectures and practice in speech problems due to lesions of the nervous system such as Cerebral Palsy, Aphasia and other dysarthrias. Prerequisite: Speech 167. Taught alternate years. (5S) **Newman**

**173. Clinical Practice.** Supervised diagnostic and remedial case work in speech pathology. Prerequisite: consent of instructor. May be taken more than one quarter. Credit arranged. Prerequisite: Speech 167. (F, W, S) **Newman**

**175. Measurement of Hearing.** Anatomy and function of ear. Review of audiometric techniques. Types of hearing loss and their implications. Taught alternate years. (3W) **Newman**

**177. Communication Problems of the Hard of Hearing.** Covers speech problems associated with hearing deficiencies. An introduction of the problems of lip reading is given. Taught alternate years. (2S) **Newman**

**181. Radio-TV Production.** Study and studio practice in directing and producing broadcasts. Planning programs, casting and rehearsal procedures, co-ordination of technical aspects of production, and problems in special studio effects. (3S) **Hansen**

**182. Radio and TV Newscasting and Writing.** Gives credit in both Speech Department and Journalism. Principles of writing, editing, organizing, and presenting news by radio and TV. Three periods a week devoted to discussion and practice in writing and arrangement; two periods a week meetings are held in the studios for analysis and presentation of news over the air. Taught alternate years. (5W) **Stewart, Hansen**

**184. Educational Broadcasting.** Study and practice in the preparation and broadcasting of educational and informational programs. Designed to acquaint teachers, Extension Service agents, civic workers, and others engaged in public informational activities with broadcast services. Taught alternate years. (3W) **Hansen**

**185. Advanced Radio-TV Production.** Specialized production problems such as remote pickups, integration of recorded with live material, network and local studio coordination, special events and producing the educational TV program. Prerequisite: Speech 181. (F, W, S) **Hansen**

**186. Radio and Television Training.** Enrollment limited to students qualified by training and ability for actual broadcasting experience in a station. An apprenticeship under direction of the station staff in executing duties expected of a regular staff employee. Students render three hours' broadcasting service per week, for each hour of credit. Time and credit arranged. (1 to 5F, W, S) **Hansen**

**190. Problems in Speech.** Selected work, individually assigned, handled and directed. Speech problems of mutual interest to you and the instructor are investigated and reported upon. Prerequisite: Instructor's consent. Time and credit arranged. (F, W, S) **Staff**

**200. Seminar in Speech.** Emphasis on the various fields of Speech. Research problems. (2F, W) **Staff**

**201. Thesis.** (2 to 5F, W or S) **Staff**

**290. Research Studies.** Advanced research in Speech and Theatrical Arts. Time and credit arranged. (F, W, S) **Staff**

# Department of Zoology

(Zoology, Entomology, Physiology, Pre-Dentistry,  
Pre-Medics, Nursing)

PROFESSORS *D. M. Hammond*, HEAD, *J. S. Stanford*, EMERITUS, *C. Biddulph*, *E. J. Gardner*, *G. F. Knowlton*, *W. F. Sigler*; ASSOCIATE PROFESSORS *T. L. Bahler*, *D. W. Davis*, *M. H. Gunnell*, *B. A. Haws*; ASSISTANT PROFESSOR *G. H. Linford*; COLLABORATORS *R. N. Annand*, *H. C. Cox*, *H. E. Dorst*, *P. R. Fitzgerald*, *A. E. Johnson*, *M. D. Levin*, *W. P. Nye*, *H. F. Thornley*.

## Office in Main 231

*Bachelor of Science Degree.* For a major in Zoology the following courses must be taken: Zoology 3, 4, 101, 107, 112, 116 or Entomology 115, 118 or 119, 127 or 128, 131; also Entomology 13 and Physiology 121, 122. The following courses are recommended: Math 34, 35, 44; Applied Statistics 131, 132; Chemistry 3, 4, 5, 121, 122; Physics 17, 18, 19; Botany 24, 25; Bacteriology 70, 71; Wildlife 160; Geology 3, 4. If you are planning graduate work leading toward the Ph.D. degree, study of foreign languages is recommended.

*For a pre-medical major in Zoology*, the listed pre-medical requirements must be completed, and in addition the following courses must be taken: Zoology 101, 107, 127 or 128, 131, and 116 or Entomology 115.

*For a teaching major in Zoology* the following courses are recommended: Zoology 3, 4, 101, 107, 112, 123, 131; Entomology 13; Physiology 120; Botany 24, 25; Bacteriology 10 or 70, 71.

## Graduate Study

*Master of Science Degree.* The Zoology Department offers a Master of Science degree in various phases of Agricultural Entomology, Genetics, Medical Entomology, Physiol-

ogy, Taxonomy, Parasitology, Mammalogy, Ornithology, and Herpetology.

*Doctor of Philosophy Degree.* Cooperatively with related departments, advanced study and research is offered for the attainment of the degree of Doctor of Philosophy in specialized fields of Zoology and Entomology. Further information may be obtained from the department or from the dean of the School of Graduate Studies.

## Zoology Courses

**1. Principles of Biology.** See Biology I under Integrated Courses in Program in General Education, University College.

**3. General Zoology.** An introduction to the principles of zoology, including consideration of the organization and functioning of animals, variety of animal life, ecology, reproduction, inheritance and evolution. Three lectures, two labs. (5F, W, S) **Staff**

**4. Vertebrate Zoology.** A study of the vertebrates with emphasis on structure, function, evolutionary relationships and some consideration of natural history. Prerequisite: Zoology 3 or equivalent. (5W, S) **Staff**

**101. Invertebrate Zoology.** The more important phyla of invertebrates, with some consideration of the local fauna. Prerequisite: Zoology 3. Three lectures, two labs. (5S) **Staff**

**107. History and Literature of Biology.** The more important men and ideas in the historical development of biology and the methods of finding references. (4F) **Gardner**

**111. Human Genetics.** Inheritance of human, physical and mental characteristics and associated problems. Prerequisite: A course in zoology or physiology. (3S) **Gardner**

**112. Principles of Genetics.** A technical course in the basic principles of heredity and variation. Prerequisite: Zoology 2 or 3 and 4, or Botany 224, 25. Four lectures, one lab. (5F, W, S) **Gardner**

**116. Parasitology.** Protozoa and worms parasitic in man, domestic animals and wild animals, and relationships between parasites and their hosts. Prerequisite: Zoology 3. Three lectures, two labs. (5S) **Bahler**

**118. Vertebrate Embryology.** An introduction to the principles of development of the vertebrates. Prerequisite: Zoology 4 or equivalent. Three lectures, two labs. (5W) **Hammond**

**119. Comparative Anatomy.** Fundamentals of structure of the main types of vertebrates are studied comparatively. Prerequisite: Zoology 4 or equivalent. Three lectures, two labs. (5S) **Hammond**

**121. Ornithology.** Bird study planned to acquaint students with native birds and birds in general. Identification, relationships, structure, habits, and distribution are studied in classroom, laboratory, and field. Two lectures, two labs. (4S) **Linford**

**122. Mammalogy.** Introduces students to Mammalia, with particular reference to Utah and North American species. Identification, distribution, structure, habits, and economics importance are stressed. Two lectures, two labs. (4W) **Gunnell**

**123. Natural History of Animals.** Identification, habits, food, distribution and other features of common Utah animals. Also, methods of collection and preparation of specimens for study, display and storage. Laboratory time is spent in making observations and collections in the field. Prerequisite: One or more courses in zoology. Two lectures, two labs. (4F) **Linford**

**127. Cytology.** Study of cells, with emphasis on chromosomes and their behavior. Two lectures, two labs. (4W) **Gardner**

**128. Elements of Histology.** Study of tissues, including characteristics of different kinds of tissues and the main organs. Three lectures, two labs. (5F) **Bahler**

**129. Histological Technique.** Techniques employed in making preparations of animal tissues for microscopic study. Three labs. (3S) **Bahler**

**131. Organic Evolution.** Critical study of the facts and theories pertaining to evolution. Prerequisite: One basic course in biological science. Zoology 111 or 112 recommended. (3W) **Gardner**

**150. Herpetology.** Classification, distribution, life habits, and identification of amphibians and reptiles, with emphasis on the local forms. Prerequisite: Zoology 4. Two lectures, two labs. (4F) **Gunnell**

**155. Ichthyology.** Ecology, classification, and life histories of native and introduced fishes. Two lectures, two labs. (4W) **Sigler**

**201. Special Problems.** Individual study of a problem under the guidance of a staff member. Credit arranged. (F, W, S) **Staff**

**214. Advanced Genetics.** Intensive study of problems of inheritance, with emphasis on recent and current research. Prerequisite: Zoology 112. (3S) **Gardner**

**235. Protozoology.** The protozoa, with emphasis on methods of study, especially procedures used in research on parasitic protozoa. One lecture, one lab. (2F) **Hammond**

**240. Research and Thesis.** Research connected with problem undertaken for partial fulfillment of requirement for Master of Science degree. Credit arranged. (F, W, S) **Staff**

**221, 222, 223. Seminar.** Attendance required of all graduate students in department during each quarter in residence. Problems relating to research in general or to current researches in zoological science are discussed by faculty, graduate students, and advanced undergraduates. (1F, 1W, 1S) **Staff**

## Entomology

*Bachelor of Science Degree. For a major in Entomology, the following courses are required: Zoology 3, 101, 107, 112, 131; Entomology 13, 103, 104, 108, 111, 112, 115; Botany 24, 25, 30, 130; Chemistry 3, 4, 5, 121, 122 (or 10, 11, 12); Mathematics 35; Wildlife Management 160. The following are recommended: Zoology 4; Entomology 21, 120, 230; Agronomy 118; Applied Statistics 131, 132; English 111; Horticulture 131; Physics 6, 7. If you are planning graduate work you are advised to study a foreign lan-*

guage and take Chemistry series 3, 4, 5, 121, 122.

*For a major in Agricultural Entomology* under the College of Agriculture, the requirements of that College as well as those of Entomology must be completed.

## Entomology Courses

**13. General Entomology.** The structure, classification, distribution, inter-relationships, and life histories of insects. Three lectures, two labs. (5S) **Staff**

**21. Social Life of Honey Bees.** Honey bees are among the most highly developed animals with respect to social organization. Factors in this social organization are studied, including communication and physiology. The elements of beekeeping are also considered, including practice in handling bee colonies. Taught alternate years. (2S) **Levin**

**103. Systematic Entomology.** Classification of insects. Insect collection required. Prerequisite: Entomology 13. One lecture, one lab and field collecting. Taught alternate years. (3F)

**104. Advanced Systematic Entomology.** A study of the principles of classification and the rules of zoological nomenclature. Practice is given in the preparation of keys, description of species, and scientific illustration. Prerequisite: Entomology 103. One lecture, two labs. Taught alternate years. (3W) **Davis**

**105. Forest Entomology.** Principal insects attacking forest and forest products. Some attention is also given principles of biological control. A brief study is made of forest vertebrates with emphasis on insect-eating birds. Two lectures, two labs. (4F) **Staff**

**108. Agricultural Entomology.** Insect pests of major economic importance to agriculture, including their recognition, type of damage done, distribution, life history, and methods of control. Three lectures, two labs. (5F) **Davis**

**111. Insect Morphology.** Structure of insects, including external and internal anatomy. Prerequisite: Entomology 13. Three lectures, Two labs. Taught alternate years. Not offered 1958-59. (5F) **Haws**

**112. Insect Physiology.** Function of the organ systems of insects. Prerequisite: Entomology 111. Three lectures, two labs. Taught alternate years. Not given 1958-59. (5W) **Haws**

**115. Medical and Veterinary Entomology.** A study of 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 received major attention. Prerequisite: Zoology 3 or equivalent. Two lectures, two labs. (4W) **Staff**

**120. Insect Pollination in Relation to Agriculture.** Pollinating insects in agriculture, including beekeeping as related to crop pollination, utilization of native pollinating insects, and special problems in the pollination of many commercial crops. Taught alternate years. (2W) **Staff**

**138. Aquatic Entomology.** Identification, distribution, life histories and adaptations of aquatic insects, with particular reference to local streams and lakes. Two lectures, one lab. (3S) **Staff**

**210. Special Problems.** Individual study under staff guidance. Prerequisite: Entomology 13, 103, 108. Credit arranged. (F, W, S) **Staff**

**230. Insects in Relation to Plant Diseases.** A study of insect vectors of plant diseases, including modes of transmission, nature of the pathogens and interrelationships of the pathogen, insect and host plant. Prerequisite: Entomology 108 or Botany 130. Taught alternate years. Two lectures, one lab. (3W) **Davis**

**231. Biological Control of Insect Pests.** Study of invertebrate parasites and predators of insects. Consideration is also given to diseases of insects, vertebrate predators, and destruction of undesirable plants by insects. Prerequisite: Entomology 13 or 108. Two lectures, one lab. (3W) **Davis**

**233. Aphidology.** Morphology, biology and taxonomy of aphids. Prerequisite: Entomology 108. Taught alternate years. (2W) **Staff**

**250. Research and Thesis.** For research connected with problem undertaken for partial fulfillment of requirements for Master of Science degree. Credit arranged. (F, W, S) **Staff**

## Physiology

For a major in Physiology the following courses must be taken: Physiology 4, 121, 122, 123; Zoology 3, 4, 107, 112, 118, 119, 128 and 131; Biochemistry 191. Recommended are Mathematics 34, 35 and 44; Physics 17, 18, 19; Chemistry 3, 4, 5, 115, 121, 122; Bacteriology 70, 71; and at least one year of a foreign language.



## Physiology Courses

**4. Human Physiology.** For the student who desires a survey of physiology but who is not planning advanced intensive study. It deals with the functioning of the human body, with emphasis upon broad general biological principles. Five lectures, one lab. (5F, W, S) **Staff**

**20. Human Anatomy.** Structure of the main human body systems with emphasis on the muscular, skeletal and nervous systems. For students desiring a more thorough study of human anatomy than is given in Physiology 4. Prerequisite: Physiology 4. Two lectures, one lab. (3W) **Linford**

**120. Physiology.** The functioning of mammals, with emphasis on muscular, nervous, and circulatory systems of man. Prerequisite: Physiology 4 or Zoology 3 and 4. Three lectures, two labs. (5S) **Biddulph**

**121, 122. Mammalian Physiology.** An intensive and detailed two-quarter course in physiology in which the function of each of the organ systems of man and animals is studied. You may not register for 122 without having had 121. As preparation, Physiology 4, Zoology 3 or 4, and courses in physics and chemistry are recommended. Three lectures, two labs. (5F, 5W) **Biddulph**

**123. Endocrinology.** The glands of internal secretion, with emphasis on the hormones in reproduction. As preparation, Physiology 4 or equivalent, or Zoology 3 and 4 are recommended. (3S) **Biddulph**

**131. Comparative Physiology.** A comparative study of the physiological functions, primarily of the vertebrates. Prerequisite: Physiology 4. Two lectures, one lab. (3S) **Staff**

**200. Special Problems.** Laboratory course for special investigations in physiology. Prerequisites: Physiology 121, 122 or special permission. (2 to 5F, W, S) **Staff**

**241. Methods of Endocrine Research.** Methods used in studying the endocrine glands. Prerequisite: Physiology 123. (3F) **Staff**

**260. Research and Thesis.** Research connected with problem undertaken for partial fulfillment of requirements for Master of Science degree. Credit arranged. (F, W, S) **Staff**

## Pre-Dentistry

If planning to enter dentistry you may take the necessary courses in the University College to satisfy re-

quirements for admission to any school of dentistry in the United States. *Suggested pre-dental schedule:*

### Freshman

	F	W	S
Chemistry 3, 4, 5 .....	5	5	5
Mathematics 34, 35, 44 or 46 .....	3	5	3
English 1, 2, 3 .....	3	3	3
Air Sci., Military Sci., or P. E. ....	1	1	1
Electives (optional) .....	3	2	5
<b>Total</b> .....	<b>15</b>	<b>16</b>	<b>17</b>

### Sophomore

	F	W	S
Zoology 3, 4 .....	5	5	...
Physics 17, 18, 19 .....	5	5	5
Air Sci., Military Sci. or P. E. ....	1	1	1
Electives (optional) .....	6	6	11
<b>Total</b> .....	<b>17</b>	<b>17</b>	<b>17</b>

### Junior\*

	F	W	S
Chemistry 121, 122 .....	5	5	...
Zoology 118 or 119 .....	...	5	or 5
Electives .....	8	7	12
<b>Total</b> .....	<b>17</b>	<b>17</b>	<b>17</b>

Recommended electives are Psychology, History, Political Science, Sociology, Economics, Scientific Vocabulary, and other English courses.

If planning to receive a B.S. degree in a combined curriculum (three years here and one year in a dental school) you must fulfill the group, English composition, and military requirements of USU and must complete a minimum of 141 credits of pre-professional work.

## Pre-Medics

The University College offers the courses to provide a pre-medical training that satisfies entrance requirements of medical schools in the United States and Canada. *Suggested pre-medical schedule:*

\*Students with unusually good records are sometimes accepted after two years of pre-dental work. In this case the required courses included in the three-year program listed above must be completed in two years.

## Freshman

	F	W	S
English 1, 2, 3 .....	3	3	3
Chem. 3, 4, 5 .....	5	5	5
Math. 34, 35, 44 or 46 .....	3	5	3
Air Sci., Military Sci. or P.E. ....	1	1	1
Electives .....	3	3	5
Total .....	15	17	17

## Sophomore

	F	W	S
Zoology 3, 4 .....	5	5	....
German, French or Latin .....	5	5	5
Physics 17, 18, 19 .....	5	5	5
Electives .....	2	2	7
Total .....	17	17	17

## Junior

	F	W	S
Chem. 121, 122 .....	5	5	....
Zoology 112 .....	5	....	....
Zoology 118 .....	....	5	....
Chem. 115 .....	....	....	5
Electives .....	7	7	12
Total .....	17	17	17

Recommended electives are Scientific Vocabulary (English 5), Psychology, College Grammar, Technical Writing, History, Political Science, Sociology, Economics, Philosophy, Literature, and Chemistry 101. Some medical schools re-

quire and a number recommend Comparative Anatomy.

If interested in graduation from USU before attending medical school you may major in any subject.

If interested in a pre-osteopathic program you should consult the pre-medical adviser.

If planning to receive a B.S. degree in a combined curriculum (three years here and one year in a medical school) you must fulfill the group and English composition and military requirements of USU and must complete a minimum of 141 credits of pre-professional work.

## Nursing

If you have Registered Nurse credentials you may pursue studies toward your Bachelor of Science degree in nursing. Credits earned toward the R. N. are applied toward the B. S., as evaluated by the Registrar. You may be graduated with a major in Nursing or you may complete your University work in such a field as Public Health or Bacteriology.

*The biggest thing any teacher does is to awaken the individual to his own worth.*



## *College of Agriculture*



R. H. Walker, Dean

## College of Agriculture

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### *Degrees Offered:*

Bachelor of Science

Master of Science

Doctor of Philosophy

# College of Agriculture

R. H. Walker, Dean

Office in Agricultural Science 131

Agriculture today is a complex and specialized industry offering opportunities for a career in many fields—more than any other industry, and as many or more careers in the city than on the farm. The demand for well trained men and women in the various phases of agriculture is probably greater today than it has been for many years. The best trained person receives the best employment opportunities, and likewise, has the best chances for success in his chosen work.

The programs of study of the College of Agriculture have been geared to the changing conditions and cover training for a wide variety of professional and vocational fields within agriculture and related industries. The College seeks to assist young men and women:

- To become a successful farmer or rancher.

- To qualify for employment in agricultural industry: farm equipment, farm building, water and irrigation, agricultural chemicals, fertilizers, food processing, grain and seed processing, meat and poultry packing, feed manufacturing, dairy processing, fats and oils, textiles and fibers, floriculture, and hatcheries.

- To become a teacher of agriculture in high school or college, a county agent, or an extension specialist in a land grant college.

- To become a research scientist in industry, in an agricultural experiment station, or in a government agency.

- To make a career in agricultural communications: radio, television, news, publications, advertising agencies, photography.

- To become a conservation specialist to conserve and rebuild our natural resources: our soil, range-land, water, forests, fish and wildlife.

- To enter public and private services: U. S. Government, foreign agricultural service, city, county, and regional planning, agricultural consultant work, private business.

- To become leaders in the community in which they live so they can intelligently serve their fellowmen and fulfill their obligations as citizens of a free world.

## Facilities and Equipment

Utah State University, Utah's land-grant college, is well equipped to train students to qualify for these special positions as well as to give them a broad general training in the basic sciences and in the humanities. Its highly trained staff and excellent physical facilities provide an opportunity for students to train for an interesting and profitable career.

The new *Agriculture Science Building* was erected on the campus to house the administrative offices of the College of Agriculture, the Agricultural Experiment Station, and the Cooperative Extension Service. The departments of Applied Statistics, Agricultural Economics, Agronomy, and Horticulture are also housed in this building, where modern class



rooms and well-equipped laboratory facilities are available for teaching and research.

*The Animal Husbandry Farm* is located approximately one-half mile north of the campus. New housing facilities are available for housing of livestock and for special phases of animal research work. These facilities include a new building with modern equipment for the study of animal metabolism, physiology, and nutrition.

*The Dairy Farm* is located one mile north of the campus. Here the most modern facilities and equipment for housing dairy cattle and for research in dairy cattle management, nutrition and breeding have been constructed. A modern milking parlor is a part of these facilities and milk is handled by the most modern and up-to-date methods. Milk is transported from the dairy farm to the processing plant on the campus by a large refrigerated tank truck.

*The University Poultry Farm* is north of the campus adjacent to the Dairy Farm. The poultry plant is well equipped for student instruction and research work in poultry husbandry. Extensive investigations are under way for the study of the best methods of feeding, housing, and disease control to obtain the most economical production. The Turkey Farm is located approximately one mile north and east of the campus. Research in turkey breeding and management is conducted at this farm.

*The Veterinary Science Building* offers headquarters for teaching and research in animal physiology, hygiene, and animal disease research. Well equipped laboratories, isolation rooms, and facili-

ties for keeping livestock and poultry for study and research are available. A veterinary clinic is maintained for diagnostic service for livestock and poultry producers.

Staff members who participate in the research program of the Agricultural Experiment Station are devising better methods of feeding and cropping, are developing more valuable strains of fruits, crops, and livestock, and more remunerative systems of marketing agricultural products. These activities are studied by the students first hand, and student employment enables many to take active part in the research work of the Experiment Station. This arrangement gives the student clear insight into scientific methods and valuable practical experience. Special attention is given to improved methods in farming operations, in use of tools and machinery, and in management of livestock and crops.

The great practical value of the various curricula of the College of Agriculture is shown by the records of graduates who have gone back to the farm, or have become specialists as teachers or investigators, and have become leaders in their chosen work.

### Herbarium

The Intermountain Herbarium was established in 1932 by action of the Board of Trustees. Its function 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. The results of the herbarium researches are published as technical articles in scientific journals and economic and popular bulletins and circulars released by the Utah Agricultural Experiment Station. Most plant species that grow in Utah and the Intermountain Region are represented in the herbarium.

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

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

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

## Curricula in Agriculture

Students entering the College of Agriculture may pursue one of three courses leading to the Bachelor of Science degree in Agriculture, as follows:

1. *General Agriculture*, which is designed to meet the needs of the student who desires a broad training in scientific and practical agriculture.

2. *Specialized Agriculture*, in which the student chooses to specialize or major in one department of the College of Agriculture.

3. *Technical Agriculture*, which is for the student who plans to pursue graduate study in one of the

basic agricultural sciences, or who plans to enter employment in which technical agricultural training is required.

### General Agriculture

The course in General Agriculture is designed to meet needs of students who desire a broad general training in scientific and practical agriculture.

Unless the student has chosen a specific phase of agriculture in which to major, it is usually best for him to follow the curriculum in General Agriculture for two years. Later, when he decides to major in a specific field, he can arrange his major course without serious complications.

The prescribed courses and minimum number of credits in the various fields are as follows:

(a) Minimum Requirements in Following Divisions:

Agricultural Economics .....	9
<sup>1</sup> Applied plant sciences .....	26
<sup>2</sup> Applied animal sciences .....	26
Agricultural Engineering .....	9
Total .....	70

(b) Physical Science, Biology, Social Science, and Language and Arts:

Physical Science	Credits	Total
Math. 34 or 35 .....	3 or 5	
Chem. 10, 11 & 12 or 3, 4, & 5 .....	15	18 or 20
Biology		
Botany 24 or 25 and Bacteriology 10 or 70 & 71 .....	10	
Zoology 3 .....	5	
Zoology 112 .....	5	
Entomology 108 .....	5	
Botany 130 .....	5	30

<sup>1</sup>Courses to be selected from agronomy and horticulture.

<sup>2</sup>Courses to be selected from animal husbandry, dairy industry, poultry husbandry, and veterinary science.

Soils 56 is required as part of the 26 credits.

<b>Social Science</b>		
Agricultural Economics 53 .....	5	
Other social science courses (See University group requirements) .....	5	
		10
<b>Language and Arts</b>		
Basic Communications 1, 2, 3 .....	9	
University group requirement (See University group requirements) .....	8	17
(c) Military Science or Physical Education .....	6	6
		<b>81 to 83</b>
Total credits prescribed ....	151	
Elective .....	85	
Total .....	186	

## Specialized Agriculture

A student may major in one of the following departments: Agricultural Economics, Agronomy, Animal Husbandry, Botany and Plant Pathology, Dairy Husbandry, Horticulture, Poultry Husbandry, or Zoology, Entomology and Physiology. Information concerning the curriculum for a major in any of these departments may be obtained from the head of the major department, who should be consulted before registering.

In addition to major and minor requirements as specified by each department, the student majoring in specialized agriculture is required to take a minimum of one 3-credit course in each of two departments in the applied plant sciences and one 3-credit course in each of two departments in applied animal sciences.

You must also complete the following:

Mathematics 35  
Chemistry 10, 11 & 12 or 3, 4 & 5  
(Majors in agricultural economics may substitute Physical Science

31 and 32 and another 5 hours of exact science for 15 hours of chemistry)

A minimum of 14 credits in the following courses:

Botany 24 and 25  
Zoology 3 and 4  
Bacteriology 10 or 70, 71  
Zoology or Botany 1  
Physiology 4

(See various department course requirements in this group. Zool. 1, Bot. 1, and Physiology 4 are not accepted by some departments)

Agricultural Econ. 53, 5 credits;  
and two additional 3-credit courses  
Social science group, 8 credits  
Language and arts group, 8 credits

Basic Communications, 9 credits  
Agron. 56

A total of 186 credits, 60 of which are of Upper Division grade, and a minimum of 1 credit each term for six terms in military science or physical education are required for graduation from the College of Agriculture.

## Technical Agriculture

For students who plan to do graduate work or to enter employment in which technical training is required, technical courses are provided in each of the departments. Students may register for these courses only upon permission of the department and the dean.

## Two-Year Program in Agriculture

The College of Agriculture offers a 2-year course in practical agriculture for 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 College of Agriculture. Practical farm problems are emphasized.

In addition to completing a 20-credit major in 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:

Basic Communications, 9 credits; Biology, 5 credits; Physical Science, 5 credits; and Social Science, 5 credits.

The following courses are open to students in the non-degree course in Agriculture: Agricultural Economics 53, 58, 63, 70; Agricultural Engineering 1, 14, 15; Agronomy 7, 8, 56; Animal Husbandry 1, 10, 15; Dairy Husbandry 2, 6, 7; Horticulture 1, 2, 4, 5, 10; Irrigation and Drainage 10; Landscape Architecture 3; Poultry Husbandry 1, 2, 8; Veterinary Science 20.

Students in the two-year course must complete 96 credits to obtain a certificate.

## Course in General Agriculture

1. **General Agriculture.** A course to assist freshmen in their adjustment to college life and acquaint them with what is offered in the fields of agriculture. Required of all freshmen in agriculture. (1F) Dean and Staff

# Department of Agricultural Economics

PROFESSORS *G. T. Blanch*, HEAD, *W. P. Thomas*, EMERITUS; ASSOCIATE PROFESSORS *R. H. Anderson*, *E. M. Morrison*, *E. W. Lamborn*, *L. C. Michaelsen*, *N. K. Roberts*, *M. H. Taylor*; ASSISTANT PROFESSORS *L. H. Davis*, *D. C. Strong*, *R. A. Christensen*; RESEARCH ASSISTANT *J. U. Sandberg*; COLLABORATOR *C. E. Stewart*.

## Office in Agricultural Science 133

Agricultural Economics is a study of economic or business principles and problems involved in producing and marketing agricultural products. A well trained Agricultural Economist is familiar with major scientific principles and practices of crop and livestock production and with principles of economics and business practices. A wide range of employment opportunities is available to capable men and women with such training. Op-

portunities include the operation of one's own farm, professional farm manager, teaching, research or extension work at either state or federal level, foreign service, and as owner-operator or employee of any business that buys, sells, or processes agricultural products or provides supplies or services for agriculture.

This department offers work for the B.S. and the M.S. degrees as well as service courses for majors

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in other departments in Agriculture and in several other colleges.

**Bachelor of Science Degree.** Candidates for the B.S. degree must meet the University group and other requirements and the requirements of the College of Agriculture. Required and other suggested classes are listed below. Equivalent and substitute classes are accepted for transfer students.

### Graduate Study

**Master of Science Degree.** Facilities of the department for training graduate students in general agricultural economics, farm management, land economics, agricultural finance, marketing, and prices are augmented by the research investigations conducted by the department staff and the federal collaborator with the assistance of graduate students. The following courses in Agricultural Economics may be used for graduate credit: 102, 105, 106, 112, 116, 121, 155, 163, 180.

Agricultural Economics 53 or its equivalent is prerequisite to all other courses in Agricultural Economics.

Suggested Course of Study for the B.S. Degree in Agricultural Economics

#### Exact Sciences:

Course	Credits
Math. 34 .....	3
Math. 35 .....	5
Chem. 10, 11 and 12 or Phys. Sci. 31, 32, 33 and 5 hrs. in another exact science .....	15
Total .....	23

#### Biological Sciences:

Zool. 1, Bot. 1 or Bact. 1 .....	5
Bact. 10, Bot. 24 or Zool. 3 .....	5
Physiology 4 .....	4
Total .....	14

#### Social Sciences (Excl. Econ.):

Sociology 10 or 70 .....	5
Pol. Science 10 .....	5
Other .....	5
Total .....	15

#### Languages and Arts:

Speech 21 or 4 .....	3 or 5
English 40 or 41 .....	5
Total .....	8 or 10

Basic Communications .....	9
Military Science or Physical Education .....	6

#### Economics:

Economics 52 .....	5
Economics 107 .....	3
Economics 108 .....	3
Other .....	9

Total ..... 20\*

\*A minimum of 15 credits required

#### Business Administration:

Course	Credits
Accounting 100 .....	4
Management 147, 148 .....	6
Total .....	10*

\*A minimum of 6 credits required

#### Applied Plant Science and Soils:

Agronomy 56 .....	4
Other .....	11
Total .....	15*

\*A minimum of 10 credits required

#### Applied Animal Sciences:

An. Hus. 10 .....	5
Other .....	10
Total .....	15*

\*A minimum of 10 credits required

#### Agricultural Engineering:

Ag. Eng. 10 or 110 .....	4 or 3
Ag. Eng. 15 .....	3
Ag. Eng. 101 .....	5
Total .....	12 or 11

#### Statistics:

Appl. Stat. 101 .....	4
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#### Major:

Course	Credits
Ag. Econ. 53, 58, 62, 102, 105, 106, 112, 121, 155, 163, 180 .....	35

## Ag Economics Courses

**53. Fundamentals of Agricultural Economics.** A basic introduction to the field and principles of Agricultural Economics. (5F, S)

Fall, Anderson; Spring, Blanch

**58. Introductory Farm Management.** A case-problem approach to the basic considerations of organizing the productive resources of a farm using the farm plan, using labor and power efficiency, and measuring the farm business success. (3F) **Morrison**



**62. Principles of Marketing.** Organization of the marketing system including functions, institutions, policies and practices. (5W)

**Lamborn**

**63. Marketing Agricultural Products.** Economic principles, marketing agencies, functions, and channels of distribution. (3S) **Christensen**

**70. Farm Accounts.** Farm accounts and their application to the organization and management of farms and to filing of income tax statements. (3S) **Christensen**

**102. Intermediate Farm Management.** Principles and practices associated with the successful operation of farms. Emphasis will be placed on the principles underlying the production and financing functions. Three lectures, one lab. (4W) **Roberts**

**105. Agricultural Credit.** Principles of agricultural credit. Emphasis on problems and methods of financing agriculture. Taught alternate years. (3F) **Morrison**

**106. Land Economics.** Economic principles underlying utilization, valuation and tenure of land and water. Attention given prevailing policies, methods and techniques involved in dealing with economic problems of land and water use. Taught alternate years. (3S) **Strong**

**112. Agricultural Cooperatives.** Principles of cooperation; organization, operation and management of cooperative sales, purchasing, and service associations. (3S) **Christensen**

**116. Livestock Marketing.** Principles and practices of marketing as applied to livestock and products of the meat packing industry. (3F) **Anderson**

**121. Statistical Methods.** Mathematics and statistics applied to the analysis of Agricultural Economics data. (5W) **Roberts**

**150. Special Readings.** Directed readings on selected problems for undergraduates. Any quarter. Time and credit arranged. **Staff**

**155. Law on the Farm.** A non-technical consideration of some legal rights, responsibilities and liabilities associated with the operation of a farming business. Taught alternate years. Not taught 1958-59. 3 credits. **Morrison**

**163. Intermediate Marketing.** Principles and functions of marketing and their application to the marketing of agricultural products. (3F) **Anderson**

**180. Government and Agriculture.** A study of government in relation to selected economic problems, past and present, in agriculture. Emphasis will be on the problems, the objectives of government action, the alternative proposals for action, action taken, and the results so far as they can be interpreted. (3W) **Blanch**

**202. Advanced Farm Management.** Economic principles and their application to specific production functions in agriculture. (5F) **Morrison**

**206. Farm Appraisal.** Principles and techniques of land valuation and appraisal. Taught alternate years. Not taught 1958-59. 3 credits. **Roberts**

**214. Thesis.** Any quarter. Time and credit arranged. **Staff**

**235, 236, 237. Student and Faculty Seminar.** Required of all senior and graduate majors. (No credit. F, W, S) **Staff**

**240. Research Methods.** Methods and techniques of doing research in Agricultural Economics. (3F) **Blanch**

**250. Special Problems.** Directed study on selected problems for graduates. Any quarter. Time and credit arranged. **Staff**

**263. Advanced Marketing.** Economic principles applied to the solution of agricultural marketing problems. (5W) **Lamborn**

**280. Agricultural Policies.** Application of economic principles and methods of analysis to the formulation and appraisal of agricultural policies and programs. (5S) **Strong**

*Leadership is not a collection of qualities; it is a form of behavior.*

# Department of Agronomy

## (Crops and Soils)

PROFESSORS *H. B. Peterson*, HEAD, *S. A. Taylor*, *D. C. Tingey*; ASSOCIATE PROFESSORS *J. W. Carlson*, *D. R. McAllister*, *G. L. Stoker*, *L. Wilson*; ASSISTANT PROFESSORS *K. R. Allred*, *W. G. Dewey*, *L. A. Jensen*, *R. L. Smith*, *R. F. Nielson*, *G. Van Epps*; COLLABORATORS *R. S. Albrechtsen*, *J. W. Carlson*, *D. R. Dewey*, *J. L. Haddock*, *V. Hale*, *A. C. Hull*, *J. W. Metcalf*, *W. Parkey*, *M. W. Pedersen*, *J. P. Thorne*, *A. L. Urie*, *R. W. Woodward*.

## Office in Agricultural Science 225

Study and research in Agronomy focus upon problems of crop production and soil conservation in arid regions. Course offerings emphasize interrelations of plants, soil, precipitation, and irrigation water in production of maximum crop yields under a variety of conditions. Four types of majors for the bachelor's degree are offered within the department: Crop Science, Technical Crops, Soil Science, and Technical Soils.

## Graduate Study

The Agronomy Department offers opportunity for study and research toward the Master of Science degree. A year of graduate study in the department is also accepted by other colleges and universities as a year toward a Ph.D degree in the subject pursued. The outline of studies and the research program are designed around the objectives of the individual student. The department in co-operation with related departments, is prepared to give strong programs in various phases of plant breeding, crop production, weed technology, soil chemistry, soil physics, soil conservation, soil management, soils and irrigation, soil science, and agronomy.

The following courses are acceptable for graduate credit toward

the master of science degree in Agronomy: 109, 110, 120, 155, 165; in addition for students majoring in crops, 107.

The following courses are acceptable for graduate credit toward the master of science degree in departments other than Agronomy: 103, 107, 109, 110, 114, 116, 120, 121, 155, and 165.

*Doctor of Philosophy Degree.* The Agronomy Department, in cooperation with related departments, is approved for the offering of advanced study and research for the attainment of the degree of doctor of philosophy in specialized fields of soil science related to irrigation agriculture. Detailed information may be obtained from the department or from the Dean of the Graduate School.

## Crops

### Crop Science

Students majoring in Crop Science are prepared for positions in the Agricultural Extension Service; as agronomists, farm planners, conservationists and soil scientists in the United States Civil Service; and as field men or farm managers in the commercial field.

\*Recommended classes. 44 may be taken. Engl. 111; Geol. 115, Range Mgt. 160.

In addition to the general University group requirements, majors in Crop Science should take: Agron. (Crops) 7, 8, 103, 109, 112, 118, 120; Agron. (Soils) 56, 107, 111, 114, 155; Ag. Econ. 53 and two 3 credit classes. Ag. Eng. 10 or 110; Animal Science 6 hours (3 hrs. in each of 2 departments); Bact. 10; Bot. 24, 25 and 120 or 130; Chem. 10, 11 and 12; Ent. 108; Geol. 3; Hort. 3 hrs.; Math. 35 and 44; Zool. 112.

## Technical Crops

Students majoring in Technical Crops are prepared to do graduate work or to take technical employment in research and teaching in crop production, plant breeding, weed control, and seed technology. Those students having special aptitude in the fundamental sciences and who are interested in plant sciences, will find unlimited opportunity in this field.

In addition to the general University group requirements, majors in Technical Crops should take: Agron. (Crops) 7, 8, 103, 109, 112, 118, and 120; Agron. (Soils) 56, 107, 111, and 155 or 165; Ag. Ec. 53; Ag. Eng. 10 or 110; Animal Science 3 hrs., Appl. Stat. 131 and 132; Bact. 10; Bot. 24, 25, 120, and 130 (recommend 30 and/or 108); Chem. 10, 11, 12 and 190; Ent. 108; Geol. 3; Hort. 3 hrs; Math. 35 and 46 (recommend also 97, 98, and 99); Zool. 112.

## Crops Courses

**7. Grain Crops.** The classification, history, and cultural methods involved in the production of grain crops on irrigated and dry lands. Three lectures, one lab. (4S) **Dewey**

**8. Root and Miscellaneous Crops.** Cultural methods, market grades and commercial possibilities of sugar beets, potatoes, tobacco, and fiber crops are studied. Three lectures. (3W) **Allred**

**103. Forage Crops.** Alfalfa, clovers, grasses and other farm forages; classification and methods of production, harvesting and storage; meadow and pasture management. The place of forage crops in rotations and soil conservation is considered. Three lectures, one lab. (4F) **Allred**

**109. Plant Breeding.** Principles, techniques, and practices in breeding improved varieties of crop plants. Prerequisite: Zool. 112. four lectures, one lab. (5W) **Dewey**

**112. Field Crops Seminar.** Review and discussion of current agronomic problems, practices, and available employment. Required of all seniors in department. One lecture. (1F or W) **Staff**

**118. Weeds.** Identification of weeds, the weed problems in agriculture, and methods of control. An assessment is made for field trips. Three lectures, one 3-hour lab. (4F) **Tingey**

**120. Field Crop Seed Production.** Methods, problems, and commercial possibilities of field crop seed production in the Intermountain West. Two lectures. (2F) **McAllister**

**121. Seed Analysis and Grading.** Impurities of crop seeds; methods of analysis and testing; seed inspection; application of federal standards in the grading of field crops. Two 3-hour labs. (2W) **McAllister**

**201. Hays and Pastures.** Recent advances in current problems related to the production and use of hays and pastures. Prerequisite: Agron. 103 or equivalent. Three lectures. (3W) **Allred**

**208. Advanced Field Crops.** Recent advances in the improvement and production of cereal, potato, and sugar beet crops. Prerequisites: Agronomy 7 and 8 and 103. Three lectures. (3S) **McAllister**

**213. Crop Seminar.** Current scientific topics in farm crops. Required of all graduate majors. One conference weekly. (1F, W, S) **Staff**

## Soils

### Soil Science

A major in Soil Science prepares the student for employment as a specialist in the Soil Conservation Service, the Soil Conservation Division of the Indian Service, soil sur-

veyors, soil scientists in the Bureau of Reclamation, extension specialists, farm managers, as well as other positions related to reclamation and conservation of soil and water resources.

In addition to the general University group requirements, majors in Soil Science should take: Agron. (Crops) 7, 8, 103, 112, 118; Agron. (Soils) 56, 107, 111, 114 and 155 or 165; Ag. Ec. 53, and two-3 credit classes; Applied Animal Sciences, two 3 hr. classes (in two depts.) Bact. 10; Bot. 24, 25, 120; Chem. 10, 11, 5 or 3, 4, 5, and Chem. 17 & 18 or 115; Ent. 108 or Bot. 130; Geol. 3, Hort. 1 or 4; Math. 35 and 46\*; Phyx. 10 hrs.; A. E. 10, or 110 Eng. Draw 60. A total of 63 hrs. in mathematics, physics and chemistry. These requirements meet the minimum approved by the Soil Science Society of America.

### Technical Soils

Majors in Technical Soils are prepared for graduate work and employment in research, soil testing, land classification, and soil management. Students having high scholastic standing and marked ability in the fundamental sciences find real opportunities in this major.

In addition to general University group requirements, majors in Technical Soils should take Bact. 10 or 70 and 71; Bot. 24, 25, 120; Chem. 3, 4, 5, or 10, 11 and 5 and 17 and 18 or 115; Physics 20, 21, 22; 5 hrs. of either Organic Chemistry or advanced Physics; Mathematics through 99; Geol. 3; Ag. Econ. 53; An. Sci. 5 hrs; Hort. 3 hrs; A. E. 110, or C.E. 143; Applied Statistics 131, 132; Agron. 7 or 8, 56, 103, 107, 111, 112, 114, 155, 165.

### Soils Courses

**56. Introductory Soils.** Fundamentals of soils with a brief study of soil fertility and management problems. A beginning course for students in agriculture. Prerequisite: Inorganic chemistry. Three lectures, one 3-hr. lab. (4F, S) **Staff**

**57. Introductory Soils Laboratory.** 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 as Agron. 56 Laboratories. **Staff**

**58. General Soils.** Fundamentals of soils with emphasis on range and forest soil problems. Designed for students in forestry and range management. Prerequisite: Inorganic Chemistry (Credit not given for both 56 and 58.) Four lectures, one 3-hr. lab. (5S) **Miller**

**107. Fertility and Management of Irrigated Soils.** Methods and amounts of irrigation water application in relation to soils and crops. Fertilizer selection and use in relation to irrigation and soil management. The management and reclamation of saline soils. Organic matter maintenance in soils. Prerequisite: Agron. 56. Five lectures. (5F or W) **Smith**

**110. Soil Microbiology.** See Bacteriology 110.

**111. Soil Seminar.** Review and discussion of current soil problems and literature. Required of all seniors in department. One lecture (1F or W) **Staff**

**114. Soil Survey and Conservation.** A study of soil forming factors and of soil classification, survey, and conservation. Prerequisite: Agron. 56 or 58 and 3 credits in field crop production or range management. Two lectures, three lab periods. (5S) **Miller**

**155. Soil and Plant Relations.** Plant and soil relations with respect to physical environment and the availability and absorption of minerals. Laboratory in soil and plant analysis in relation to soil productivity. Prerequisite: Agron. 56. For seniors. Two lectures, one 3-hr. lab period. (3W) **Peterson**

**165. Physical Edaphology.** The physical relationships of soil moisture, temperature, penetrability, and aeration to plant growth. Mineralogical composition, structural conditions, tillage, irrigation, and other soil management practices are considered as factors that affect these relationships. Prerequisite: General Soils, General Physics or Chemistry, or approval of the instructor. Three lectures. (3F) **Taylor**

**212. Seminar.** Review of current literature in soil science. Required of graduate students in soil science; open to staff members. One credit per quarter. (1F, W, S) **Staff**

**214. Soil Physics.** A theoretical discussion of soil as a physical body. The structure of clay minerals and their relation to absorption and other surface phenomena; soil moisture and air relations; and soil stabilization are considered. Prerequisites: Agronomy 165 and approval of the instructor. Three lectures. (3S odd years) **Taylor**

**219. Saline and Alkali Soils.** Survey of literature and technical problems in the development, evaluation, classification, reclamation and management of saline and alkali soils. Two lectures. (2F) **Peterson**

**221. Genesis, Morphology and Mineralogy of Soils.** A critical review of basic principles of soil classification, soil forming factors in relation to generic, morphological and zonal distribution of soils. Prerequisite: Agron. 114 or permission of instructor. Three lectures. (3F odd years) **Miller**

**224. Soil Chemistry.** Composition and reactions of soil colloids. Prerequisite: Approval of instructor. (3S even years) **Smith**

**227. Chemical Analysis of Soils.** A laboratory course in soil chemistry. Two lab periods. Prerequisite: Agron. 155 and 224, or approval of instructor. (2W) **Staff**

**266. Physical Analysis of Soils.** A laboratory course in Soil Physics. Registration limited to twelve students. Two 3-hour lab periods. Prerequisite: Agron. 165. (2F) **Taylor**

### Special Courses

**150. Special Problems.** Subject and credit arranged. Conferences or laboratory investigations. **Staff**

**218. Special Problems.** Special problems in crop production, crop breeding, soil fertility, or other phases of agronomic work. Students review literature on the problem and conduct experiments. Any quarter. Time and credit arranged. **Staff**

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

# Department of Animal Husbandry

## (General Animal Husbandry and Technical Animal Nutrition)

PROFESSORS *J. A. Bennett*, HEAD, *L. E. Harris*, *G. R. Henderson*; ASSOCIATE PROFESSORS *R. R. Keetch*, *M. A. Madsen*, *H. Steffen*; ASSISTANT PROFESSORS *J. E. Butcher*, *Darrell Matthews*, *Doyle Matthews*, *J. C. Street*; RESEARCH ASSOCIATE *D. O. Williamson*; RESEARCH ASSISTANT *Robert Raleigh*.

### Office in Animal Industry 307

Students majoring in Animal Husbandry are expected to complete courses numbered 2, 10, 41, 42, 110, 120, 125, 150, 155, 160, 165, 175.

For students who plan to enter livestock production, county agent work, vocational agricultural teaching or some similar work, a minor in Agricultural Economics, Agronomy, Dairy Husbandry, Poultry Husbandry, or Range Management is recommended.

Courses in Animal Husbandry are designed to train students for

solving problems encountered in raising beef cattle, sheep and swine in the western region.

### Graduate Study

The Animal Husbandry Department offers opportunity for study and research toward the Master of Science degree in Animal Production, Animal Breeding, and Animal Nutrition. In cooperation with other departments a Master of Science degree is offered in Animal Nutrition and Biochemistry (See Graduate School, Animal Nutrition



and Biochemistry). Graduate study toward a Master of Science degree is acceptable by other Universities toward advanced degrees.

The following courses are acceptable for graduate credit toward a Master of Science degree in departments other than Animal Husbandry: 150, 160, 155, 175, and all courses in the 200 series.

*Doctor of Philosophy Degree.* The Animal Husbandry Department in cooperation with related department is approved for offering the Doctor of Philosophy. (See also, Graduate School, Nutrition and Biochemistry for details on the Doctor of Philosophy degree in this area.) Detailed information may be obtained from the department or from the Dean of the Graduate School.

## General Animal Husbandry

A major in General Animal Husbandry prepares the student to be a livestock operator, a ranch manager, a county agent, or to take positions related to livestock raising with various other state and federal agencies. A student taking this major will be prepared to pursue a Master of Science degree after he has completed certain additional basic courses as required in the technical field.

## Technical Animal Nutrition

Majors in Technical Animal Nutrition are prepared for graduate work and technical employment in research. Students having high scholastic standing and marked ability in the fundamental sciences find real opportunities in this major.

In addition to general University requirements, majors in Technical Animal Nutrition should take: Agricultural Economics 53; Agronomy 6, 56, 103; Animal Husbandry 10, 110, 125, 150, 155, 160, 165, 175; Bacteriology 70, 71; Botany 24 or 25; Chemistry 3, 4, 5, 17, and 18; either Physiology or Chemistry 121, 122, 191; Dairy 110 or Poultry 1; Mathematics 35, 44; either statistics or Mathematics 97, 98, 99; Physics 6 and 7 or 17, 18, and 19; Veterinary Science 20; Zoology 3, 4, 112.

### Suggested Course of Study for Majors in Animal Husbandry

Freshman		Credit
Course		
A. H. 2*, 41*, 42*	.....	4
M. S. or P. E.	.....	3
Math. 35*	.....	5
Botany 24* or 25*	.....	5
Bact. 10* or 70* and 71	.....	5
Agr. Econ. 53*	.....	5
Soc. Sci. or electives	.....	5
Eng. 1*, 2*, 3*	.....	9
Vet. Sci. 20*	.....	5
Electives	.....	2
Total	.....	48

Sophomore		Credit
Course		
A. H. 10*	.....	5
M. S. or P. E.	.....	3
Chem. 10*, 11*, 12* or 3*, 4*, 5*	.....	15
Zool. 3*, 4*	.....	10
Agron. 56*	.....	4
Lang. and Arts	.....	8
Electives	.....	3
Total	.....	48

Junior		Credit
Course		
A. H. 110*, 120*, 125*, 165*	.....	12
Dairy 110 or Poultry	.....	5
Range Mgt. 160	.....	5
Agr. Econ. 58	.....	3
Vet. Sci. 120	.....	4
Zool. 112*	.....	5
Electives**	.....	12
Total	.....	46

Course	Senior	Credit
A. H. 150*, 155*, 160*, 175*, 185 .....		18
Agr. Econ. 116 .....		3
Agron. 103 .....		4
Electives** .....		20
Total .....		45

## Animal Husbandry Courses

**1. Fundamentals of Animal Husbandry.** Live-stock production in relation to other phases of agriculture in the United States and Utah, influence of geographical location and conditions, various types of farm animals and functions performed or products produced, and introduction to important factors in successful livestock production. (3F or S) **Steffen**

**2. Animal Husbandry Laboratory.** Exercises in judging, market classification and practical problems. Should be taken at the same time as A. H. 1. Two lab periods. (2F or S) **Madsen**

**10. Feeds and Feeding.** Differences in digestive tracts of farm animals; physiology of digestion and feed utilization; composition of feeds; the balancing of rations; and feeding of farm animals. Four lectures, one lab. (5W or S) **Steffen**

**15. General Animal Breeding.** For students who do not expect to major in animal science but who want general knowledge of reproduction and breeding principles and their application to larger farm animals. (3F) **Madsen**

**41 & 42. Livestock Practicum.** Development of skills in the feeding, care, fitting and showing of beef cattle, sheep and swine. Two lab periods. (W and S; 1 credit per quarter; 2 quarters required of majors) **Staff**

**110. Beef Production.** Factors involved in economical production of beef cattle, including organization of the enterprise, breeds of cattle, selection of breeding stock, production of maximum calf crop, handling and feeding animals of different ages on the range and in the feed lot, and marketing of surplus stock. Prerequisite: A. H. 10. (3F) **Bennett**

**120. Swine Production.** Systems of production with emphasis on those suited to western conditions. Breeding, management and feeding of the breeding herd, and of market swine. Prerequisite: A. H. 10. (3W) **Steffen**

**125. Sheep Production.** Range and farm sheep, with emphasis on range production. Methods of production of lambs and wool, grading and marketing practices, feeding and studies of the breeds and their adaptation to the different husbandry practices. Prerequisite: A. H. 10. (3W) **Madsen**

**150. Animal Nutrition.** Attention given fundamental phases, including protein, carbohydrate, fat, and mineral metabolism, vitamins, content and deficiencies of range forage, and feed and forage poisoning. Prerequisite: Chem. 11, 12 (or equivalent), and A. H. 10. (4W) **Harris**

**155. Animal Breeding.** Application of genetics to improvement of farm animals. Breeding systems, inheritance problems, fertility and sterility in larger farm animals are emphasized. Prerequisite: Vet. Sci. 20, Zool. 112. Four lectures, one lab. (5S) **Bennett**

**160. Livestock Production Problems.** Attention is given various problems in livestock production, especially in Utah. Students are expected to apply knowledge acquired in previous courses. Prerequisite or concurrent registration; A. H. 150, 155. (3S) Fee for field trips, \$30.00. **Staff**

**165. Livestock Judging and Selection.** Animal form and its relation to function. Emphasis on evaluation of live animals in terms of their probable value of production of meat, wool or work. Emphasis on judging for both commercial and show ring purposes. The Livestock Judging Team is selected from students taking this course. Prerequisite: A. H. 2. Three labs. (3F or S) **Madsen**

**175. Wool Technology.** Marketing and manufacturing of wool, and laboratory techniques used in studying wool. Methods of grading scouring and measuring length, diameter, crimp, density, tensile strength and other characteristics are included. Prerequisite: A. H. 125. (3S) **Madsen**

**185. Meats.** Cutting, selection, and identification of wholesale and retail cuts of beef, pork, and lamb, with references to prices, relative economy, uses, nutritive value, chemical composition, and palatability. Preparation of meats for the home freezer will be emphasized. (3W) **Staff**

**201. Problems in Animal Breeding.** Readings, discussions and lectures concerning genetic facts and theories as related to animal breeding. Prerequisite: A. H. 155. (3W) **Bennett**

**210. Techniques in Nutrition Research.** An original project will be completed with the primary objective being to orient students on how to plan, conduct, and summarize research in the field of animal nutrition. Prerequisite: A. H. 150. (2-6F, W or S) **Harris**

\*Required of all majors.

\*\*Suggested electives Chem. 190 or Chem. 121, 122 and 191.

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**214. Advanced Animal Nutrition.** The measures used for nutritional value of feed, nutrient requirements of animals, and the cause, detection, treatment and prevention of nutritional diseases. Prerequisite: A. H. 150. (taught 58-59) (3W) **Harris**

**215. Nutrition Laboratory.** Review and practice in techniques used in nutrition research. Two labs. (2F) **Street**

**220. Problems in Animal Production.** Same as A. H. 210, except work is in animal production. Prerequisite: A. H. 160. (2-6F, W or S) **Steffen-Madsen**

**230. Animal Breeding Research.** Students outline a problem, make a critical review of pertinent literature, collect, analyze necessary data, and prepare a report of their research. This work may be the thesis material for the

M. S. degree, or may be done for graduate credit apart from the thesis. (2-5F, W or S) **Bennett**

**240. Animal Nutrition Research.** Same as A. H. 230, except that research is in some phase of animal nutrition. (2-5F, W or S) **Harris**

**250. Animal Production Research.** Same as A. H. 230, except that research is in some phase of animal production aside from breeding or nutrition. (2-5F, W or S) **Steffen; Madsen**

**261, 262, 263. Animal Industry Seminar.** Topics of current interest and research problems are presented by graduate students, staff members and guest speakers. Subjects discussed relate to nutrition, breeding, and production during Fall, Winter, and Spring, respectively. (May be repeated.) (1F, W, S) **Staff**

# Department of Applied Statistics

ASSOCIATE PROFESSOR *R. L. Hurst*, HEAD; ASSISTANT PROFESSOR *Kuo Hwa Lu*.  
Office in Agricultural Science 19

The Department of Applied Statistics offers service courses in statistical methodology to all departments of the University.

Majors in Applied Statistics are prepared for graduate work and employment in the research programs of Agricultural Experiment Stations, Colleges, Universities, and Industry.

Students majoring in Applied Statistics will be expected to complete Applied Statistics 51, 131, 132, 141, 215, and (156 or 220) and at least 13 credit hours in the division of Mathematical Statistics. Majors in Applied Statistics should take a minor in one of the applied fields.

A minor in Applied Statistics should consist of Applied Statistics 51, 131, 132, 141, 215.

## Applied Statistics Courses

**51. Elementary Statistics.** An introduction to the nature of statistical reasoning. The nature of observations. The condensation and pre-

sentation of data. Elements of sampling. The use of statistics in making estimates and drawing conclusions. Prerequisite: Mathematics 35 or equivalent. Three lectures, one lab. (4F) **Staff**

**131. Statistical Methods.** Sample-based inferences about populations. Individual and group comparisons. Tests of significance. Linear regression and correlation. Prerequisite: Mathematics 35 or equivalent. Three lectures, one lab. (4F) **Hurst**

**132. Statistical Methods.** Analysis of variance and covariance. Individual degrees of freedom. Multiple regression. Prerequisite: Applied Statistics 131 or equivalent. Three lectures, one lab. (4W) **Hurst**

**141. Sampling Methods.** The methods and theory of obtaining sample estimates of population characteristics. Reliability of sample estimates. Types of sampling procedures. Analysis and interpretation of samples. Prerequisite: Applied Statistics 131 and 132 or equivalent. Three lectures. (3S) **Hurst**

**156. Data Processing on Electric Accounting Machines.** Adapting research data to mechanical processing. Card design; coding methods; experimental design; analysis of enumeration and measurement data. Prerequisite: Applied Statistics 131 and 132 or equivalent. Two lectures, one lab. (3W) Taught alternate years. Given 1958-59. **Lu**

215. **Design of Experiments.** Fundamental principles of experimental design. Completely randomized; randomized blocks; latin squares, components of error; factorial arrangements; confounding; split plot; incomplete block designs; and fractional replication. Prerequisite: Applied Statistics 131 and 132 or equivalent. Three lectures, one lab. (4S) **Hurst**

220. **Advanced Applied Statistics.** Introductory theory and applications on least-square solutions, rank correlations, path coefficient analysis, and non-parametric methods. Prerequisite: Applied Statistics 131 and 132 or permission by instructor. Three lectures. (3W) Taught alternate years. Not given in 1958-59. **Lu**

## Department of Botany and Plant Pathology

PROFESSORS *Orson S. Cannon*, HEAD, *W. S. Boyle*, *G. W. Cochran*; ASSOCIATE PROFESSORS *H. H. Wiebe*, *A. H. Holmgren*; ASSISTANT PROFESSORS *G. W. Miller*, *R. J. Shaw*, *G. W. Welkie*; RESEARCH ASSOCIATE *J. L. Chidester*; COLLABORATORS *E. H. Cronin*, *B. N. Wadley*, *M. C. Williams*.

### Office in Plant Industry 201

Study and research in Botany focus upon four major fields of study: cytology, pathology, physiology, and taxonomy. Course requirements for all fields of botany include: Botany 24, 25, 30, 117, 120, 240; Math. 35; Chem. 10, 11; Zool. 112. Required additional courses for the various fields of botany are as follows: Cytology: Botany 116, 118, 130, or 150; Zool. 3, 4, 112, 131; Chem. 121, 122; Physics 6, 7; Pathology: Botany 116, 130, 150; Ent. 108; Zool. 3; Taxonomy: Botany 116, 118, 130, 150; Zool. 107, 131, 214; Agronomy 56; Range Management 126.

Recommended additional courses for specialized fields include: Cytology: Chem. 191; Physics 140; Pathology: Ent. 230; Math. 44, 97, 98, 99; Chem. 121, 122; Physics 6, 7; Ag. Econ. 53; Bact. 70, 71; Agronomy 56; Applied Statistics 131, 132; Hort. 131; Physiology: Bot. 116, 130, 150, 224; Math. 44, 97, 98, 99; Chem. 101, 115, 121, 122; Physics 20, 21, 22, 140; Agron.

56; Zool. 3, 4; Taxonomy: Applied Statistics 131, 132; Botany 104, 108, 112; German 1, 2, 3; Latin 1, 2, 3.

Course requirements for a teaching major: Botany 24, 25, 30, 120, 130.

### Graduate Study

The Department of Botany offers opportunity for research and graduate study leading to the Master of Science degree in the following specialized fields: Cytology, Pathology, Physiology, Taxonomy. The research and graduate possibilities in these subjects are greatly augmented through the cooperation of the Utah Agricultural Experiment Station, United States Department of Agriculture, and the Intermountain Herbarium.

Each candidate must submit a thesis on a topic within the field of his major subject. The thesis alternate, "Plan B" is not acceptable for the M.S. degree.

## Botany and Plant Pathology Courses

**1. Principles of Biology.** Basic life principles illustrated in both plant and animal forms. See lower division group requirements. (5F, W, S) **Shaw**

**24. Elementary Botany.** The structure, physiology, and reproduction of flowering plants. Consideration given basic structure and functions of cells, tissues, stems, roots, leaves, flowers, fruits, and seeds. Three lectures, two laboratory periods. (5F, or S) **Boyle; Shaw**

**25. Elementary Botany.** A survey of the plant kingdom. Emphasis on comparative morphology and reproduction processes of representatives of the major groups of plants. Introduction to the classification of vascular plants is given toward the end. Three lectures, two labs. (5W) **Boyle; Shaw**

**30. Taxonomy of Vascular Plants.** The kinds, relationships, and classifications of vascular plants, chiefly of this region. Assumes a knowledge of fundamental principles of botany. Three lectures, two labs. (5S) **Holmgren**

**108. Agrostology.** A taxonomic study of native and imported grasses of western ranges. Special attention is given to species important in grazing and soil binding. Assumes a knowledge of fundamental principles of botany. (4W) **Holmgren**

**112. Aquatic and Marsh Plants.** A taxonomic and ecological study of aquatic and marsh plants. Emphasizes important food and cover plants for wildlife. Assumes a knowledge of the fundamental principles of botany. (4F) **Holmgren**

**116. Microtechnique.** Principles and methods in the preparation of plant materials for microscopic study; theory and use of the microscope. Assumes a knowledge of fundamental principles of botany. (4W) Taught alternate years. Offered in 1958-59. **Boyle**

**117. Anatomy.** Structure and development of major cell types and tissues; comparative anatomy of the stem, root, and leaf of seed-bearing plants. Assumes a knowledge of fundamental principles of botany. (4W) Taught alternate years. Not offered in 1958-59. **Boyle**

**118. Cytology.** A detailed study of the cell; emphasizes structure and behavior of chromosomes and their bearing on genetics, reproduction and evolution. Assumes a knowledge of fundamental principles of botany or zoology. (4S) **Boyle**

**120. Elementary Plant Physiology.** The principal physiological process of plants, including water relations, synthesis and use of foods, and growth phenomena. Prerequisites: Botany 24 and Chem. 12 (Chem. 12 may be taken concurrently). Three lectures, two labs. (5W, or S) **Wiebe**

**121. Water Relations of Plants.** Factors affecting the availability of water, its absorption and use in plants, and the effects of water deficits on plant processes. Prerequisite: Bot. 120 (3S) Taught alternate years. Offered in 1958-59. **Wiebe**

**130. Principles of Plant Pathology.** Fundamental principles underlying disease in plants. The types of disease and methods of study give the student a comprehensive view of plant pathology. Assumes a knowledge of botany fundamentals. Prerequisite: Botany 24. Three lectures, two labs. (5F) **Cannon**

**140. Forest Pathology.** Nature, cause and control of diseases affecting forest trees. Factors inducing loss in forest products are emphasized. Prerequisites: Botany 24, 25, and 130, or one quarter of plant ecology. (4W) Taught alternate years. Offered in 1958-59. **Cannon**

**150. Mycology.** Comparative morphology and nuclear behavior of the fungi. A summary of the field with special attention given forms important in agriculture, medicine, and industry. Prerequisite: Bot. 25. (5W) Taught alternate years. Offered in 1957-58. Three lectures, two labs. **Cannon**

**224. Advanced Plant Physiology.** Plant metabolism and growth, including respiration, photosynthesis, plant hormones, and growth correlations. Prerequisite: Botany 120. (3S) Taught alternate years. Not offered in 1958-59. **Wiebe**

**\*234. Special Problems.** Open to qualified students majoring in botany and related fields. Any quarter. Time and credit arranged. Registration only by special permission. **Staff**

**\*240. Seminar.** (1F, W or S) **Staff**

**\*250. Research.** Conduct original research in plant cytology, pathology, physiology, or taxonomy. Open to all qualified college students in botany and plant pathology. Any quarter. Time and credit arranged. **Staff**

\*Individual Instruction.



# Department of Dairy Industry

## (Dairy Production and Dairy Manufacturing)

PROFESSORS *A. J. Morris*, HEAD, *L. H. Rich*, *G. E. Stoddard*; ASSOCIATE PROFESSORS *G. Q. Bateman*, *P. B. Larsen*; ASSISTANT PROFESSOR *E. E. Starkey*; RESEARCH ASSOCIATE *C. H. Mickelsen*; RESEARCH ASSISTANT *M. L. Dew*.

### Office in Animal Industry 101

The course in dairying is planned with a general course for those students who plan to complete work for a terminal bachelor of science degree and a technical course for those who plan to continue their academic work toward more advanced degrees.

All majors in Dairy Industry must have practical experience on a dairy farm or in a dairy manufacturing plant before graduation with a bachelor of science degree.

### Graduate Study

The Dairy Industry Department offers an opportunity for research in graduate study for a Master of Science degree in the fields of Dairy Production and Dairy Manufacturing. The Master of Science degree is acceptable by other universities toward further graduate study and a Ph.D. degree.

## Dairy Production

### General Course

Designed for students majoring in Dairy Production to prepare them for the management and operation of dairy farms and herds; and to become county agricultural agents or field men in the dairy industry.

Students must fill the general re-

quirements of the University and the College of Agriculture and in doing so must take Zoology 3 and Botany 24 as part of the Biological Science group. The following courses are also required. Dairy 2, 6, 12, 110, 111, 112, 120, 121, 122, and at least three quarters of Dairy 215, Bacteriology 10 or 70 and 104; Chemistry 10, 11, and 12; Veterinary Science 20 and 120; Animal Husbandry 10; Mathematics 35; Agricultural Economics 58 or 62; Zoology 112; Agronomy 7, 56, and 103.

### Technical Course in Dairy Production

Designed for students majoring in Dairy Production to prepare them for technical employment in the field of dairy production and for advanced study and research in this field.

In filling the general requirements of the University, dairy students take Zoology 3 and Botany 24. The following courses must also be taken: Dairy 2, 6, 12, 110, 111, 112, 120, 121, 122, and at least 3 quarters of 215; Bacteriology 70, 71, and 104; Chemistry 3, 4, 5, 121, 122, 108, and 190 or 191; Veterinary Science 20, and 120; Animal Husbandry 10, 150, and 155; Mathematics 35; Agronomy 7, 56, and 103; Agricultural Economics 58 or 62; Zoology 112.

## Dairy Manufacturing

### General Course

This course prepares students of commercial dairying to be plant operators, equipment and supply technicians, inspectors, graders, and sanitarians.

In addition to the general University requirements students in general Dairy Manufacturing should take: Chemistry 10, 11, 12, 190, and 108; Mathematics 35; Ag. Econ. 53, and 62; Land. Arch. 3; Poultry 1 and 2; Bacteriology 104 and 105; Business Administration 20 and 63; Dairy Industry 5, 6, 101, 102, 103, 104, 105, 110, 215, 254.

### Business Course in Dairy Manufacturing Plant Management

This course prepares students for plant managers, salesmen, and dairy industry administrators.

In addition to the general University requirements, students in the business course in Dairy Plant Management must take: Mathematics 35; Chemistry 10, 11, 12, 190 and 108; Ag. Econ. 53 and 62; Bacteriology 104 and 105; B. A. 20, 63, 154, 156 and 160. Dairy Industry 5, 6, 101, 102, 103, 104, 105, 110, 215 and 254.

### Technical Course in Dairy Manufacturing, in Preparation for Research and Quality Control

In addition to the general college requirement, students in the technical course in Dairy Manufacturing Research and Quality Control should take: Chemistry 3, 4, 5, 17, 18, 121, 122, 190, 108; Bacteriology 104, 105, 160, and 180; Appl. Stat. 131; Physics 6; Math. 35 and 44; Dairy Industry 5, 6, 101, 102, 103, 104, 105, 110, 121, 215, and 254.

## Dairy Courses

All dairy students must take 3 or more quarters of DI 215.

**2. Introductory Dairying.** Considers the history of the dairy industry. An introductory study is made of starting dairy herds; breeds of dairy cattle; cow testing associations; herd records, calf feeding, and general feeding.

Composition of milk, factors that affect it; practical composition and quality tests; farm dairy machines; production of quality milk; and dairy arithmetic will be studied. Practical skills will be emphasized. (4W)

**Morris & Starkey**

**5. Judging Dairy Products.** Methods and practice in judging and grading dairy products for market and show. (2S)

**Larsen**

**6. Market Milk.** Modern sanitary methods of producing, processing, and marketing milk, cream, and related products. (5F)

**Larsen**

**7. Dairy Practice.** For special or short course students only. Practice in plant manufacture emphasized. Time and credit arranged. **Larsen**

**12. Dairy Cattle Breeds and Pedigrees.** Breeds of dairy cattle, breed organizations and their programs, testing plans, pedigree analysis, record keeping and study of breeding establishments. Taught 1959-60. (3F)

**Starkey**

**101. Manufacture of Ice Cream and Ices.** Purchase of raw materials. Chemical and physical structure of an ice cream mix and its relation to the finished product. Standardizing, processing, and freezing of standard commercial ice cream, sherbets, and ices. Merchandising and selling included. (5S)

**Morris**

**102. Manufacture of Butter.** Receiving and grading of milk and cream. Neutralization and pasteurization of cream. Manufacture, packing, and grading of butter under commercial conditions. Quality and composition control are emphasized. Taught 1959-60. (4W)

**Larsen**

**103. Manufacture of Cheese.** Factors involved in making cheddar and other varieties of cheese. Classification, statistics, curing, marketing, and factory organization. (5F)

**Morris**

**104. Concentrated Milks.** Theory and practice of manufacture of evaporated sweetened condensed milk powder and other concentrated milk products. Consideration is given to plant processes, vacuum pan and drier operation, factors affecting quality and use. Taught—1958-59. (5W)

**Larsen**

**105. 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. (6F, W or S) **Morris and Larsen**

**110. Dairy Production.** Growth and development of dairy heifers; herd management systems; housing and equipment; disease control; sanitation and quality milk production; economy in dairy farming; sire and heifer management. (5S) **Starkey**

**111. Dairy Cattle Judging and Evaluation.** Types of various breeds of dairy cattle, judging individual cows, showing judging and type classification, type and production relations. Visits to dairy farms. (2S) **Starkey**

**112. Feeding Dairy Cattle.** Characteristics of feeds, digestion, and metabolism, feeding standards and feeding systems. Economy and comparative value of feeds on irrigated farms. (3W) Prerequisite AH 10. **Stoddard**

**120. Dairy Cattle Breeding.** Studies of the inherited characteristics of dairy cattle to be considered in selecting breeding stock. Artificial

insemination of dairy cattle, physiology of reproduction, breeding programs and systems in use. (3W) (Prerequisite—Zool. 112)

**Starkey**

**121. Milk Secretion.** Anatomy and function of the mammary gland, theories of secretion, methods of milking, mastitis control, factors affecting composition, quantity and quality of milk. (3S) (Prerequisite—Organic Chemistry)

**Stoddard**

**122. Dairy Herd Mgt. and Operation.** Dairy herd management, land-livestock balance, operational efficiencies, herd improvements, new developments and trends, and critical analysis of dairy literature. Student discussions and reports. (3S) (Open to seniors in Dairy Production or by permission of instructor.) **Staff**

**215. Seminar.** Discussions and reports of current literature and research reports by students. At least 3 quarters required of all dairy students. (1, F, W, S) **Staff**

**220. Research in Dairy Industry.** Any quarter. Time and credit arranged. **Staff**

**254. Special Problems in Dairy Industry.** Any quarter. Time and credit arranged. **Staff**

## Department of Horticulture

(General Horticulture, Floriculture, Pomology, Vegetable Crops)

PROFESSOR *L. H. Pollard*, HEAD; ASSOCIATE PROFESSORS *A. B. Call*, *A. R. Hamson*; ASSISTANT PROFESSORS *R. J. Gerber*, *R. A. Norton*, *D. K. Salunkhe*; INSTRUCTOR *O. Riethmann*; SUPERINTENDENT OF HOWELL FIELD STATION, *Odeal Kirk*;\* ACTING SUPERINTENDENT OF HOWELL FIELD STATION, *Max Williams*; SUPERINTENDENT OF FARMINGTON FIELD STATION, *R. Draper*; COLLABORATOR *L. R. Hawthorn*.

### Office in Ag Science 204-B

Students may pursue a course in general Horticulture, or they may specialize in Floriculture, Pomology, or Vegetable Crops. All students majoring in Horticulture are required to take the same basic courses during the first two years. Suggested special courses are outlined for the junior and senior years.

\*On leave.

All courses in Horticulture numbered above 100 may be used for graduate credit.

Students with special aptitude and high scholastic standing may enroll in a course in technical horticulture which is designed to prepare them for graduate work and for technical employment. Students interested in such a course should contact the Head of the Department.

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In addition to the University group requirements, students in the technical course must take mathematics through 98. Chem. 3, 4, 5, 115, 121 and 122 and 190 or 191; Physics, 6, 7, or 17, 18 and 19; Bot. 24, 25, 30, 118, 120, 130; Bact. 70 and 71; Agron. 56, 107; App. Stat. 131 and 132; Hort. 101, 102, 115, 131, 1, 2, 4, 5 and 10; Zoo. 112; Ent. 108; Eng. 111.

### Graduate Study

The department offers work towards a Master of Science degree in Horticulture. The outline of studies and the research program are designed around the objectives of the individual student.

*Doctor of Philosophy Degree.* The Department of Horticulture in collaboration with the related departments of Botany and Plant Pathology, Zoology, Entomology, and Agronomy, offers a curriculum of study for the degree of doctor of philosophy in Plant Breeding. The general requirements for this degree are explained in the School of Graduate Studies, page 73. The particular requirements will depend upon the student's background in bachelor's and master's curriculums. The detailed information pertaining to this program can be obtained from the Head of the Department.

### Lower Division Courses in Horticulture

Freshman		
Course		Credit
Agr. Econ. 53 .....	5	
Basic Communications .....	9	
Botany 24 and 25 .....	10	
Botany 30 .....	5	
Hort. 1 .....	4	
Hort. 4 .....	4	
Math. 34 & 35 .....	3-5	
P. E. or M. S. & T. ....	3	
Social Science .....	5	
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### Sophomore

Course	Credit
Ag. Econ. ....	6
Agron. 56 .....	4
Animal Science .....	3
Bact. 10 or 70 & 71 .....	5
Chem. 10, 11, 12, or 3, 4, 5 .....	15
Hort. 10 or 11 .....	4 or 3
Landscape Arch. ....	3
Math. 46 .....	5
P. E. or M. S. & T. ....	3
Social Science .....	3
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### Suggested Courses for Students in General Horticulture

Junior		
Course		Credit
Eng. 111 .....	3	
Ent. 108 .....	5	
Entomology 120 .....	2	
Hort. 100 .....	2	
Hort. 101-102 .....	8	
Hort. 108 .....	3	
Hort. 105 or 151 .....	4	
Zoology 112 .....	5	
Electives .....	18	
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### Senior

Course	Credit
Botany 120 .....	5
Botany 130 .....	5
Hort. 115 .....	4
Hort. 131 .....	5
Hort. 140 .....	4
Hort. 152 .....	4
Hort. 153 .....	3
Electives .....	18
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	48

### Suggested Courses for Student Specializing in Floriculture

Junior		
Course		Credit
Business Adm. 147 .....	3	
Chem. 121, 122 .....	5	
English 111 .....	4	
Entomology 108 .....	5	
Entomology 120 .....	2	
Hort. 116 .....	3	
Hort. 118 .....	3	
Landscape Arch. 40 .....	3	
Landscape Arch. 41 .....	3	
Zoology 112 .....	5	
Electives .....	10	
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Course	Senior	Credit
Botany 120 .....		5
Botany 130 .....		5
Chem. 115 .....		5
Hort. 115 .....		5
Hort. 119 .....		3
Hort. 120 .....		3
Hort. 130 .....		4
Hort. 131 .....		5
Hort. 153 .....		3
Electives .....		14
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### Suggested Courses for Students Specializing in Pomology

Course	Junior	Credit
Chem. 115 .....		5
Chem. 121 & 122 .....		10
English 111 .....		4
Entomology 108 .....		5
Entomology 120 .....		2
Hort. 100 .....		2
Hort. 101, 102 .....		8
Zoology 112 .....		5
Electives .....		5
		<hr/> 46

Course	Senior	Credit
Agron. 107 .....		5
Botany 120 .....		5
Botany 130 .....		5
Hort. 108 .....		3
Hort. 115 .....		4
Hort. 131 .....		5
Hort. 151 .....		4
Hort. 152 .....		4
Hort. 153 .....		3
Electives .....		12
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### Suggested Courses for Students Specializing in Vegetable Crops

Course	Junior	Credit
Agron. 107 .....		5
Botany 120 .....		5
Agron. 109 .....		5
Chem. 115 .....		5
Chem. 121, 122 .....		10
Eng. 111 .....		4
Hort. 105 .....		4
Hort. 108 .....		3
Hort. 130 .....		4
Zoology 112 .....		5
Electives .....		2
		<hr/> 51

Course	Senior	Credit
Agronomy 155 .....		3
Applied Statistics 131 & 132 .....		6
Botany 130 .....		5
Chem. 115 .....		5
Entomology 108 .....		5
Hort. 101, 102 .....		8
Hort. 131 .....		5
Hort. 153 .....		3
Electives .....		2
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## Horticulture Courses

1. **Elementary Pomology.** Principles and practices underlying production of tree and small fruits. Varieties, soils, sites, fertilizers, culture, pest control, harvesting, storage, propagation and stocks. (4F) Three lectures, one lab.  
**Norton, Gerber**

4. **Vegetable Production.** Principles and practices underlying production of vegetable crops, varieties, fertilizers, pest control, harvesting, storage, and processing of vegetables. (4S) Three lectures, one lab. **Pollard, Hamson**

10. **Principles and Practices of Floriculture.** Fundamentals involved in the culture of annual and perennial flowers, bulbs, house plants, shade trees, shrubs, lawn grasses, and green plants. (4W, odd years) **Riethmann**

11. **Garden Flowers.** Principles and practices of growing garden flowers. (3S, even years) Two lectures, one lab. **Riethmann**

100. **Pruning and Grafting.** A practical course for all students in the college dealing with the science and art of pruning and grafting of horticultural plants. Special emphasis is placed on fruit trees, but the small fruits and ornamental trees and shrubs are also included. Six lectures, 24 hours of arranged lab work and at least 10 hours of practical experience in the field required. (2W) **Norton**

101. 102. **Advanced Horticulture.** Fundamental principles relating to horticultural practices; growth and development, nutrition, water relations, temperature, light, fruit setting, and growth regulators. Prerequisite: Bot. 24, 25; Chem. 12 or 121; Agron. 56; Hort. 1 or 4. (4W, 4S, even years) Three lectures, one lab. **Hamson, Gerber**

105. **Major Vegetable Crops.** Classification, identification, origin, history, types, and uses of vegetables. (3F) One lecture, two labs. **Hamson**

108. **Small Fruit Production.** The culture of strawberries, raspberries, grapes and other small fruits in home and commercial plantings (3W, odd years) **Norton**



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**115. Breeding Horticultural Plants.** Fundamental principles and practices of plant breeding in the improvement of fruit, vegetable and ornamental plants. Prerequisites: Zool. 112; Hort. 1 and preferably 4, 10, and 108. (4S, even years) Three lectures, one lab.

Pollard, Hamson

**116. Greenhouse Management.** Principles and practices of greenhouse management. Prerequisite: Hort. 1, 10; Bot. 24, 25. (3W, even years)

Riethmann

**118. Floral Design.** Basic principles of design with emphasis on modern flower arranging. Training will be given in the different designs and in the use of accessories. (3F) Two lectures, one lab.

Riethmann

**119, 120. Systematic Floriculture.** Systematic study of garden flowers. Prerequisites: Hort. 1, 6, 10; Bot. 30, 120. Systematic study of plants grown by florists. (3F, 3W, even years) Two lectures, one lab.

Riethmann

**130. Vegetable and Flower Seed Production.** Methods and commercial possibilities of vegetable and flower seed production. A required field trip is taken into seed-producing areas in southern Idaho. (4F, even years) Three lectures, one lab.

Pollard, Hawthorn

**131. Agricultural Sprays and Dusts.** Preparation, properties, and uses of agricultural chemicals used in disease, insect, and weed control; application of fruit thinning, growth regulator, and nutritional sprays. Design, operation, and care of the application equipment. Jointly administered by the Departments of Botany and Plant Pathology, Horticulture, and Zoology, Entomology, and Physiology. Prerequisites: Bot. 130, Ent. 108 or special permission. (5S) Three lectures, two labs.

Cannon, Davis, Norton

**140. Processing of Fruits and Vegetables.** History and methods of preservation of fruits and vegetables by canning, freezing, dehydration;

processing of juices and concentrates; packing, organoleptic appraisal, and quality control. Prerequisites: Chem. 3, 4, 5, or 10, 11, 12; Bot. 24, 25; Bact. 10 or 70 and 71, or special permission. (4F, even years) Three lectures, one lab.

Salunkhe

**151. Systematic Pomology.** Systematic study of fruits; origin, classification, judging, adaptation. (4F, even years) Three lectures, one lab.

Norton

**152. Fruit and Vegetable Handling.** Problems in handling and marketing; picking, grading, packing, transportation, storage, distribution, buildings, equipment, roadside and local marketing, one laboratory period per week. Prerequisite: Hort. 1. (4F, odd years)

Gerber

**153. Seminar.** Oral and written reports on research papers and original work by students. (1F, 1W, 1S)

**156. Special Problems.** Advanced problems in floriculture, pomology, and vegetable crops for qualified seniors or graduate students. Assigned readings, or research work in library, laboratory, or field presented as term papers. Registration by permission only. (1-3, F, W or S)

Staff

**201. Research and Thesis.** Original research by graduate students taking a major or minor in horticulture. Registration by permission only. One to ten credits. 201, Fall; 202, Winter; 203, Spring; 204, First Summer Term; 205, Second Summer Term.

**215. Special Problems.** Any quarter. Time and credit arranged.

Staff

**220. Advanced Breeding.** A study of special techniques and practices used in the breeding of horticultural crops. Prerequisite: Hort. 115. (3 arr.)

Pollard, Hamson

**221. Advanced Horticultural Problems.** A study of current research as related to important horticultural problems. Prerequisites: Hort. 101, 102; Agron. 56; Botany 120. (4W)

Staff

*Cooperation is born where men harmoniously get together in a common cause.*

# Department of Poultry Husbandry

PROFESSOR *C. I. Draper*, HEAD; ASSOCIATE PROFESSORS *J. O. Anderson*, *J. D. Carson*, *D. W. Thomas*; ASSISTANT PROFESSOR *E. Clark*.

## Office in Animal Industry 201

Students majoring in Poultry Husbandry are expected to complete 30 credits of work in Poultry Husbandry. In addition to the courses listed under Poultry Husbandry, courses that will also count toward a Poultry major are Veterinary Science 120 and 170.

## Graduate Study

The Department offers courses leading to the Master of Science degree in Poultry Husbandry.

## Suggested Course of Study for Majors

### Freshman

Course	Credit
Physiol. 4 .....	5
P. H. 1 & 2 .....	4
Math. 34 or 35 .....	3 or 5
M. S. or P. E. ....	3
Agr. Econ. 53 .....	5
Bact. 10 .....	5
Vet. Sci. 20 .....	5
Hort. 1 .....	3
Eng. 1, 2, 3 .....	9
Rural Soc. 10 .....	5
Elective .....	3
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	50

### Sophomore

Course	Credit
Veg. Crops .....	3
Chem. 3, 4, & 5 or 10, 11, 12 .....	15
P. H. 8 .....	3
Agron. 6 & 7 or 8 & 56 .....	8
M. S. or P. E. ....	3
Soc. Sci. ....	3
Zool. 3 .....	5
L. A. 3 .....	3
A. H. 1 .....	3
Electives .....	4
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	50

### Junior

Course	Credit
Lib. Sci. 106 .....	1
Agr. Econ. 58 & 62 .....	6
An. Hus. 10 .....	5
Zool. 112 .....	5
P. H. 126, 107, 105, or 106, 104 .....	9
Agron. 103 .....	3
Vet. Sci. 170 .....	3
Elective .....	14
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### Senior

Course	Credit
An. Hus. 150 .....	4
Physiol. 121 .....	5
Entom. 108 .....	5
PH 125, 126, 105, or 106 .....	6
D. H. 109 .....	3
Agr. Engr. 105 .....	5
Electives .....	21
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	49

Suggested Electives: Irr. and Dr. 10; Vet. Sci. 140; Animal Husbandry 151, 155; Appl. Stat. 131, 132; Chemistry 125, 126, 190; English 5, 111.

## Poultry Husbandry Courses

1. General Poultry. A study of breeds, incubation, brooding, feeding, selection, marketing, and problems of production. (3W or S) **Draper**

2. General Poultry Laboratory. Covers the same work as Poultry 1, with practical laboratory problems. (1S) **Draper**

3. 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. (3F) Taught alternate years. (1959-60) **Carson**

104. Incubation. Problems involved in incubation, embryology, and hatchery operations. Two lectures and one lab. Lab. arr. (3S) Taught alternate years. (Taught 1958-59) **Carson**

105. Poultry Management. Problems of location of poultry farm, farm planning, renewing the flock, brooding, marketing and problems affecting labor income. Prerequisite: Poultry 1 (3W) Taught alternate years. (Taught 1958-59) **Draper**

**106. Poultry Breeding.** Consideration is given to selection pressure, inbreeding, heritability, expected gains, mating systems, and selection indexes. Prerequisites: Poultry 1, Math. 34, and Zool. 112. (4F) Taught alternate years. (1959-60) Carson

**107. Poultry Feeds and Feeding.** A study of the nutritive requirements of poultry, the composition of poultry feedstuffs, methods of feeding and formulation of rations for special needs. Prerequisite: Poultry 1. Three lectures, one Lab. (4W) Taught alternate years. (1959-60) Anderson

**108. Poultry Products.** Problems in processing, grading, packaging, transporting, labeling, and storing poultry products. (1S) Taught alternate years. (1959-60) Draper

**125. Special Problems.** Selected problems to meet student needs. Registration by permission only. Prerequisites: Poultry 1. Credit arranged. (F-W-S) Staff

**126. Seminar.** Current poultry literature studies, assigned problems and special topics. (1W) Staff  
**Poultry Diseases.** (See Veterinary Science 170)

**210. Research Problems in Poultry Husbandry.** (F, W, S) Time and credit arranged. Staff

## Department of Veterinary Science

PROFESSOR *M. L. Miner*, HEAD; ASSOCIATE PROFESSORS *L. Shupe*, *D. W. Thomas*; ASSISTANT PROFESSORS *J. H. Bell*, *J. T. Blake*, *J. A. Thomas*, *R. A. Smart*; RESEARCH ASSOCIATE *A. Olson*; COLLABORATOR *W. Binns*.

### Office in Veterinary Science Building

Courses in this department are not designed for training students to become veterinarians. Students desiring to study toward a degree in veterinary medicine (D. V. M.) must have at least two years and preferably three of pre-veterinary training at some authorized college or university, completing the basic required courses. They should then apply for entrance into a school of veterinary medicine. Enrollment in veterinary schools is limited. Students majoring in bacteriology, zoology, animal husbandry, dairy husbandry, poultry husbandry, or chemistry are eligible for entrance into all veterinary schools if the requirements in the basic sciences are fulfilled.

The state of Utah has entered into a compact with the Western Interstate Commission of Higher Education whereby Utah will subsidize the training of five students

in veterinary schools operating under the compact. Utah residents completing the pre-veterinary requirements must apply to the Utah Commission for certification. Student acceptance is dependent on choice of student by the veterinary schools.

### Suggested Pre-Veterinary Courses

The following courses are recommended for pre-veterinary training; those marked (\*) are basic pre-veterinary requirements for all schools of veterinary medicine.

\*Zoology 3, 4, 112, 118; \*Chemistry 3, 4, 5; \*Organic Chemistry 121, 122; \*Physics 17, 18, 19; \*Mathematics 35, and 46; \*Botany 24; Animal Husbandry 1, 10, 150; Poultry 1, 2; Dairy 2, 110; and \*Basic Communications 1, 2, 3.

It is also required that 20 to 30 hours be taken in the language and arts and social science groups to

meet the requirements of the veterinary schools where the individual expects to make application.

## Veterinary Science Courses

**20. Anatomy and Physiology of Domestic Animals.** A study of how the animal's body is constructed and its functions. Each system is studied separately; emphasis on the digestive and reproduction systems. Four lectures, one lab. (5F or W) **Blake**

**120. Animal Hygiene.** Principles of animal sanitation in relation to disease control. Federal and state disease control programs and the etiology, symptoms, and control measures of the more prevalent diseases are also studied with demonstrations of first aid and the common farm operations on animals. Three lectures, one lab. (4S) **Miner**

**140. Veterinary Parasitology.** Detailed study of the scientific name, common name, class, range, pathogenesis, life cycle, methods of control, and treatment of common internal and external parasites of domestic animals. Four lectures, one lab. (5F) Taught alternate years (taught 1958-59). **Miner**

**150. Artificial Insemination of Animals.** A study of the basic concepts of the science of reproduction as related to artificial insemination, training in the art of artificial insemination, and the management of artificial insemination organizations. The course is for

majors in the animal science field who have had courses in anatomy and physiology, bacteriology, nutrition, and breeding. One lecture, two labs. (3S) **Bell**

**170. Poultry Hygiene.** Principles and practices necessary to maintain poultry health. The causes, description, control, and prevention of common diseases affecting poultry in this region. Taught alternate years. (Taught 1959-60.) Two lectures, one lab. (3S) **Miner**

**200. Special Problems.** Open to upper division or graduate students majoring in subjects related to Veterinary Medicine and who wish to study a particular phase of disease in animals. Any quarter. Time arranged. Credit 1 to 3. **Staff**

**210. Research.** Outlining and conducting research on animal diseases. Any quarter. Time and credit arranged. **Staff**

**230. General Pathology.** An introduction to the cause and mechanism of disease processes: degenerative changes, circulatory disturbances, inflammation, regeneration, neoplasms, and food deficiency alterations. Prerequisites: Zool. 118 and 128. Three lectures, two labs. (5W) **Shupe**

**231. Systemic Pathology.** A study of the diseases of the cardiovascular, blood and hemopoietic, respiratory, digestive, urinary, genital, endocrine, nervous, locomotor and tegumentary systems. Prerequisite: V.S. 230. Three lectures, two labs. (5S) **Shupe**

*Initiative may be defined as a native ability to take the lead and to foresee what needs doing and do it.*

*Men are never so likely to settle  
a question rightly as when they dis-  
cuss it freely.*





*College of Business  
and Social Sciences*



**M. R. Merrill, Dean**

# College of Business and Social Sciences

## *Department of Business Administration and Secretarial Science, 92*

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## *Degrees Offered:*

Bachelor of Science

Master of Science

Doctor of Philosophy

# College of Business and Social Sciences

M. R. Merrill, Dean

Office in Main 313

The following departments are included in the College of Business and Social Sciences: Business Administration and Secretarial Science, Economics, History and Political Science, and Sociology. These basic departments are further divided to permit you to major in more specialized areas. Business Administration and Secretarial Science includes Accounting, Business Education, Business Management, Industrial Management, Merchandising, and Secretarial Science. You may major in any one of these fields. Majors in History, Political Science, and Pre-law are possible in the departments of History and Political Science. Sociology offers majors in either Sociology or Social Work. There is only one major—Economics—in the Department of Economics.

Although there are many major areas open to you, the emphasis of the College is on broad, liberal training. Certain specialties, specifically Accounting, Industrial Management, and Secretarial Science, require greater concentration and more required courses, but even here there is concern for a broad educational base. In those major fields where course specification is limited, advisers will consult with you in the selection of courses. All course programs in every area must be approved by the adviser and the dean.

In general, the business division of the College trains you for the

business world. The great majority of graduates here go directly into some business activity. A few continue on to graduate school, and wherever such plan is known, the course program is geared to this purpose. The business community wants people with broad, basic knowledge, competence in the communication skills, ability to think and act, and a degree of specialized training in a particular area. The curriculum attempts to achieve this.

Social science graduates generally look toward teaching, Government service, and certain professions, such as law and social work. There are a number who major in the social sciences for the principal purpose of acquiring a liberal education. There are also an increasing number who plan a business career, but consider that the social science background and degree provides a substantial basis for business.

*Foreign Service Training.* You should keep in mind opportunities for a career in the foreign service. The expanding role of the United States in world affairs has increased the demand for well-qualified college graduates, both men and women, in many phases of international work. Foreign service officers appear frequently on the campus to acquaint students with the possibilities of foreign service work. Qualifying examinations are administered at regular intervals at nearby centers.

Educational preparation for the foreign service involves a well-balanced curriculum in the social sciences, arts, and the humanities. Courses in the fields of political science, history, economics, literature, and modern languages should be emphasized. You may offer a major in any one of a number of fields, but we usually recommend political science or history.

It is especially important that you inform your advisor of this interest in a foreign service career as early as possible in order that

course work may be directed toward that end.

It should be emphasized that the subject areas in the College of Business and Social Sciences have been taught at the University since its founding. The Business Department was the second one established in the country west of the Mississippi. Hundreds of students have graduated with degrees in these fields, and their subsequent records confirm the quality and character of the program.

## Department of Business Administration, Secretarial Science

(Accounting, Business Management, Business Education,  
Industrial Management, Merchandizing, Secretarial Science)

PROFESSORS *E. B. Murray*, ACTING HEAD, *W. H. Bell*, *V. D. Gardner*; ASSOCIATE PROFESSORS *N. S. Cannon*, *I. Doty*; ASSISTANT PROFESSORS *H. Calder*, *G. F. Marston*, *C. D. McBride*, *F. Olsen*, *W. V. Tezak*; INSTRUCTORS *A. B. Donovan*, *H. Lundstrom*.

Office in Main 313

As a student in Business Administration, you may major in Accounting, Business Education, Business Management, Industrial Management, Merchandizing, or Secretarial Science. If majoring in Secretarial Science you should register under the advice of the instructional staff for Secretarial Science.

*Recommended Courses.* Freshman and Sophomore Years, General Education Background:

**Military Science Air Science or Physical Education**

**Biological Science Requirements:** Biology 1, Physiology 4.

**Communications Requirements:** English 1, 2, 3. (Freshmen.)

**Exact Science Requirements:** Ten hours from the following: Chemistry 1, 2; Geology 3; Math. 34, 35, 60; Physical Science 31, 32, 33; Physics 3.

**Social Science Requirements:** Ten hours from the following: Economics 51, 52; History 4, 5, 6, 10; Political Science 1, 10; Psychology 53; Social Science 1; Sociology 70.

**Language Arts Requirements:** Ten hours from the following: Art 3, 26; English 40, 41, 53, 54, 60, 61; Landscape Architecture and Planning 3.

**Departmental Foundation Work:** Ag. Econ. 62; Eng. Drawing 59; B. A. 1, 2, 3, 20, 30; Political Science 11, 12, 13; Secretarial Science 41, 42, 65, 92, and 96; Math. 60.

## Junior and Senior Year Concentrations

**Accounting** B. A. 101, 102, 103, 104, 105, 111, 121, 126, 127, 129, 130, 131, 132, 140, 149, 164, 199; **Political Science** 104, 105, 106, 107, 108; **English** 110; **Secretarial Science** 175.

**Business Management:** B. A. 109, 123, 130, 131, 132, 133, 134, 135, 149, 151, 152, 153; **Economics** 125, 126, 127, 165, 171, 174; **Political Science** 104, 105, 106; **I. E.** 120

**Industrial Management:** See succeeding page.  
**Merchandising:** Ag. Econ. 62; B. A. 131, 132, 149, 150, 151, 152, 153, 154, 156, 157, 160, 161, 162, 163, 164.

# Accounting and Business Management

## Accounting Courses

**1, 2, 3. Introductory Accounting.** Lectures, questions, problems and practice sets that require application of the theory advanced. Principles and techniques learned here are basic to further study of accounting and to understanding the common problems of business. Technique emphasized. (B. A. 1: 4F, W; B. A. 2: 4W, S; B. A. 3: 4S) **Staff**

**100. Accounting for Non-Commercial Students.** For Engineering, Agriculture, Home and Family Living, Forestry, and other non-commercial students. (4F, S) **Gardner, Cannon**

**101, 102, 103. (Intermediate) Accounting Principles.** Fundamental techniques of accounting. Gives a working knowledge of accounting as it serves the business executive. Valuable to students who aspire to a career in accounting, and also to teachers, lawyers, engineers, and farmers. Graduate credit may be allowed upon completion of special work. (4F, 4W, 4S) **Cannon**

**104, 105. Advanced Accounting Principles.** An extension covering material more advanced than that of intermediate accounting. (3F, 104, and 3S, 105) **Cannon**

**111. Industrial Cost Accounting.** Job costing, process cost accounting, standard cost, estimating cost systems, distribution cost, special considerations. (5S) **Gardner**

**121, 122. Auditing Theory and Practice.** A study of the principles and procedures associated with accounting verification and audit practice. Prerequisite: A good working knowledge of accounting principles and techniques. (3F, 3W) **Cannon**

**126. Accounting Seminar.** (1F, W, S) **Staff**

**127, 128. Income Tax Accounting.** A study of the problems arising with the imposition of taxes on income by the Federal Government, with emphasis on the accounting phases of these problems. (3F, 3W) **Cannon**

**129. Government Accounting.** Basic principles underlying treatment of public and governmental accounts. Typical topics for study are: statutory funds, budgets, trust funds, and preparation of financial reports. (3W) **Cannon**

**150. Managerial Accounting.** Emphasizes the use of accounting as a tool of control for management. Major aspects include budget and managerial control, break-even charts, selection of alternatives. Required of all Bus. Adm. Majors. (5F) **Gardner**

**199. Internship in Accounting.** Practical experience with public accounting firms in intermountain region and Pacific Coast for selected seniors. Credit arranged, not to exceed 7 credit hours. (W) **Staff**

## Business Management Courses

**20. Introduction to Business.** A survey of the general problems of business organization. The course is designed for all students who plan to major in any phase of Business Administration. (5W, S) **Staff**

**29. Managing Personal Finances.** Designed to aid in meeting the growing complexity of personal finance: How to avoid financial entanglements, installment buying, borrowing money, owning or renting a home, investing and speculating in securities, everyday legal problems, dealing with illness, death, personal taxes. (5W) **Calder**

**30. Business Mathematics.** Students who score 80 per cent or above in the mathematics placement examination, or who take college algebra should not register for this course. Does not fill exact science group requirement. (3F) **Tezak**

**117. Foremanship and Supervision.** A comprehensive study of the place and functions of the foreman or supervisor in industry and business. Emphasizes foremanship as an important part of management. Provides the practical information a foreman or supervisor needs in his work. Prerequisite: Industrial Education 120. (3F) **McBride**



**119. Job Evaluation and Wage Incentives.** The place of job evaluation and wage incentives and their use in successful management. How to set up these techniques and put them into operation. A practical course for both students and employed personnel for direct application in all levels of management. Prerequisites: I. E. 120 and B. A. 117. (3S) **McBride**

**120 Functions of Management.** Examination of the planning, organizing, recruiting, directing, and controlling functions of management. (3W) **McBride**

**130. Corporation Finance.** The structure of corporate enterprise. Financial and operating ratios and proper financial plans and methods of marketing securities are considered. Practical problems emphasized. Prerequisites: Econ. 51, 52; B. A. 1, 2, 3. (3S) **Gardner**

**131, 132. Business Statistics.** Application of statistical methods to business problems: graphs, analysis of time series, interpretation of index numbers and statistics of particular industries and business in general. Prerequisites: Econ. 51, 52. (3F, 3W) **Tezak**

**133, 134, 135. Industrial Management Problems.** Problems in industrial location: choice of site, buildings and layouts, selection, purchase and arrangement of equipment, purchasing of stores, organization, industrial research, labor relations and problems in managerial control. Problems in work simplification, time, and motion study included in 134. Prerequisites; B. A. 20. (3F, 3W, 3S) **Gardner**

**136. Development of Scientific Management.** A study of the contributions of Taylor, the Gilbreths, Emerson, Barth, and other leaders in the development of improved management. (3F) **Staff**

**138. Production Planning and Control.** Study and applications of principles of sound analysis leading to installation and operation: product engineering, production engineering, scheduling, inventory control, order preparation, tool control, dispatching, and cost control in the production process. (3S) **Staff**

**140. Insurance.** Studied from the standpoint of the consumer of insurance services. Topics treated include: types of life, property, and casualty 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. (3W) **Calder**

**141. Real Estate.** Introduction to real estate contracts, forms, principles, and recent Federal housing legislation. (3W) **Calder**

**147, 148. Administration of Small Business.** For non-business students in Engineering, Technology, and Agriculture only. Attention paid to factors determining the establishment of a business, form of the business; such operating problems as accounting, statistical control, financial control; and problems of marketing. (3W, 3S) **Calder**

**149. Business Policy.** A co-ordinating course aimed to develop perspective, judgment, and facility in solving problems in production, distribution, personnel, finance, control, and social aspects of business. Prerequisites, B. A. 130, 150, 131, 132. Required of all Business Administration majors. (5S) **Gardner**

**159. Personnel Administration.** Critical analysis of problems of labor management that confront the manager of a business enterprise and of policies and methods of dealing effectively with these problems. Lectures, problems, and selected cases. (5S) **Marston**

**165. Conference Leading.** Principles and practice in conference leading applied to methods used in industry. Emphasis given to preparation, use, and evaluation of this method as it affects industrial education programs. Workshop or lecture. (3F, W, S) **McBride**

**191. Business Administration Seminar.** Special reports and group discussion on current developments in business. (2S) **Staff**

## Business Education

The College of Business and Social Sciences and the College of Education cooperate in meeting the demand for well-trained teachers of business subjects. In the selection of your courses in Business Administration, Secretarial Science, and Education, you should consult Prof. Ina Doty, senior staff member in Secretarial Science.

## Industrial Management

The degree program in Industrial Management provides courses in executive development for people who desire to prepare for supervisory and executive work in business and industry. It includes a strong foundation of education and experience in one or more of the

areas of engineering, technology, business, or economics.

In addition to completing the required curriculum of academic studies it is recommended that the student have at least thirty weeks of practical work experience in business or industry. This is made possible through a cooperative arrangement on summer work with business and industrial organizations in the region.

The curriculum below is recommended. Substitutions can be made if approved by the adviser and dean.

## Curriculum

Freshman	Credit
English 1, 2, 3, Basic Com.....	9
Mathematics .....	8
Economics 51, General Econ.....	5
Psy. 53, General Psy. ....	5
Political Science 1, or equiv. ....	5
Literature .....	5
M. S., A. S., or P. E. ....	3
Approved electives .....	11
Work experience in Industry, 10 weeks	

Sophomore	Credit
Exact Science .....	9 or 10
Speech 21, Intermediate Public Speaking..	3
Biology .....	5
Political Science 11, Commercial Law.....	3
Eng. Dr. 59, Blueprint Read. and Ind. Draw. ....	3
T. E. 58, Manufacturing Processes .....	2
Soc. 70, Introductory Sociology .....	5
Physiology or Bacteriology .....	5
B. A. 20, Introduction to Business.....	5
Economics 52 .....	5
M. S., A. S., or P. E. ....	3
Approved electives .....	6
Work experience in Industry, 10 weeks	

Junior	Credit
I. E. 104, Occupational Analysis .....	3
I. E. 102, Instructional Aids .....	3
I. E. 120, Personnel Relations .....	3
Psy. 155, Psy. of Bus. & Ind. ....	3
Psy. 161, Social Psy. ....	3
Psy. 127, Psy. of Learning .....	3
Econ. 125, Trade-Unionism & Col. Barg... ..	3
Econ. 126, Trade-Unionism & Law .....	3
Econ. 127, Social Security .....	3
B. A. 128, Functions of Management.....	3
B. A. 1, 2, Introductory Accounting .....	8
Electives or M. S. ....	13
Work experience in Industry, 10 weeks	

Senior	Credit
B. A. 117, Foremanship and Supervision..	3
I. E. 118, Industrial Safety .....	3
B. A. 119, Job Eval. & Wage Incentives..	3
B. A. 164, Conference Leading .....	3
B. A. 133, 134, 135, Industrial Management Problems .....	9
Psy. 121, Individual Differences .....	3
B. A. 147, Administration of Small Bus... ..	3
Sociology 158, Human Rel. in Industry..	3
Econ. 150, Comparative Econ. Systems ....	3
Electives or M. S. ....	13
Electives may be in one or two of the following areas:	

### A. Engineering

- (1) Civil
- (2) Electrical
- (3) Tool
- (4) Chemical
- (5) Welding

### B. Technology

- (1) Automotive
- (2) Diesel
- (3) Aeronautics
- (4) Machine Tool
- (5) Engineering Drawing
- (6) Welding
- (7) Woodwork & Building Const.

### C. Business

- (1) Accounting
- (2) Business Management

### D. Economics

Note these features: (1) The broad general and liberal arts base. (2) The strong emphasis on the social sciences. (3) The electives (total 44 hours) for specialization in a technical field. (4) A major in the industrial management field. (5) The work experience requirement.

## Merchandizing Courses

**Principles of Marketing.** (See Ag. Econ. 62) Required of all majors in Business Administration.

**63. Salesmanship.** The history, development and opportunities in sales work. The principles of preparing for interviews, proper presentation, gaining favorable attention, arousing the desire to buy, meeting objections, and creating acceptance. Special projects are conducted in relation to a particular type of selling. Lectures and assigned cases. (4F, S)

Calder

**151, 152, 153. Problems in Merchandising.** Selected cases are used to teach methods of

marketing merchandise, selection of channels of distribution for consumer and industrial goods, sales organization and control, advertising and sales promotion, stock-turn, and price policies. (3F, 3W, 3S) **Calder**

**154. Purchasing.** The significance of purchasing as a major activity in modern business. Consideration given organization, policies, and control of the procurement function. Lectures and problems. (3F) **Staff**

**156. Principles of Advertising.** Intended for those who as business executives will direct publicity programs: includes study of the structure of advertisements, appeals used in the preparation of advertisements for different products, choice of media, consumer research, and the work of advertising departments and agencies. (5F) **Calder**

**157. Advertising for Small Business and the Retail Store.** Studies direct mail, radio, television, newspaper, window display, and layout practices. Designed to assist student in judging advertising effectiveness as a sales tool for the small businessman. (5F) **Staff**

**160. Sales Management.** Aims to give a broad view of important phases of sales administration, planning, and execution applied to manufacturing and wholesale concerns. Deals specifically with the structure and functioning of the sales organization and correlation of its activities with those of production and other departments of the business enterprise. (5W) **Calder**

**161, 162, 163. Problems in Retail Distribution.** The marketing process from the viewpoint of the retail distributor: 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 administration policies. (3F, 3W, 3S) **Calder**

**164. Credit Administration.** 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. (3S) **Staff**

## Secretarial Science

*For a Bachelor of Science degree in Secretarial Science you must include the following courses:*

SS 30	Business Communications.....	3
SS 41	First-Quarter Typewriting ....	2

SS 42	Business Typewriting .....	2
SS 43	Secretarial Typewriting .....	2
SS 51	Intro. to Secretarial Train.....	3
SS 65	Filing .....	3
SS 69, 70, 71	Transcription .....	3
SS 75, 76, 77	First-year Shorthand .....	9
SS 80, 81, 82	Intermediate Shorthand .....	9
SS 96	Posting Machines .....	2
SS 92 or 94	Business Machines or Keydriven Calculator .....	2
BA 1, 2	Accounting .....	8
BA 20	Introduction to Business .....	5
BA 30	Business Mathematics .....	3
PS 11	Commercial Law .....	3
English 5	Vocabulary .....	3
Econ. 51, 52	Principles of Economics .....	10
SS 167	Office Practice .....	2
SS 170	Statistical Typewriting .....	2
SS 175	Office Management .....	3
SS 183, 184, 185	Speed Shorthand .....	9
SS 186, 187	Secretarial Procedures .....	6
BA Upper Division Elective	.....	3
Econ. Upper Division Elective	.....	3

If you have already mastered certain skills you may be excused from some of the above requirements.

If you wish to qualify for a teaching certificate, you should add the following courses: Psychology 53, 100, 102; Education 113, 114, 161, 111, 127, 129, 130; Bacteriology 155; Secretarial Science 179, 180.

*Two-year Secretarial Program.* A two-year secretarial course is also offered you if you wish to qualify yourself for a secretarial position as quickly as possible. An official certificate is granted to you if you successfully complete the two-year course. Elementary shorthand and elementary typewriting are not required if you have had the equivalent.

## First Year

Courses	F	W	S
Basic Communications .....	3	3	3
Shorthand 75, 76, 77 .....	3	3	3
Typewriting 41, 42, 43 .....	2	2	2
Bus. Math. 30 .....	3	---	---
Psychology 53 .....	---	5	---
Intro. Sec. Sci. 51 .....	---	---	2
Biology .....	5	---	---
SS 92, 94 .....	---	2	---
Filing 65 .....	---	---	3
English 5 .....	---	---	3
P. E., M. S., A. S. ....	1	1	1
	17	16	17

## Second Year

Courses	F	W	S
Int. Shorthand 80, 81, 82 .....	3	3	3
Transcription 69, 70, 71 .....	1	1	1
Bus. Admin. 20 .....	5	---	---
Econ. 51, 52 .....	---	5	5
Political Science 11 .....	3	---	---
Bus. Admin. 1, 2 .....	---	4	4
Office Practice 167 .....	2	---	---
Bus. Com. 30 .....	---	3	---
SS 96 Posting Machines .....	---	---	2
P. E., M. S., A. S. ....	1	1	1
	16	17	16

**Two-Year Clerical Training Program.** A two-year clerical program is offered to you if you want to qualify for a clerical position. The official certificate is granted to you after you complete the two-year course.

## First Year

Courses	F	W	S
Basic Communications 1, 2, 3 .....	3	3	3
Business Mathematics 30 .....	3	---	---
Vocabulary 5 .....	---	3	---
Filing 65 .....	---	---	3
Typewriting 41, 42, 43 .....	2	2	2
Business Mach. 92 .....	2	---	---
Key-Driven Calculator 94 .....	---	2	---
Intro. Secretarial Training 51 .....	---	---	2
General Psychology 53 .....	5	---	---
Biology .....	---	5	---
Posting Machines 96 .....	---	---	2
Office Practice 167 .....	---	---	2
Physical Education .....	1	1	1
	16	16	15

## Second Year

Courses	F	W	S
Accounting 1, 2 .....	4	4	---
Business Communications 30 .....	---	---	3
Commercial Law 11, 12 .....	3	3	---
BA 20 .....	---	---	5
I. B. M. 85, 86 .....	3	3	---
Electives .....	5	---	3
Economics 51, 52 .....	---	5	5
Physical Education .....	1	1	1
	16	16	17

<sup>1</sup> Not required of students who have had previous training in typewriting and can type at least 30 words per minute.

<sup>2</sup> Not required of students who have had previous training in typewriting and can type at least 50 words per minute.

## Secretarial Science Courses

**30. Business Communications.** Fundamental principles of business letter writing, such as sales, order, collection, adjustment, and application letters. Not open to freshmen. (3F, W) **Lundstrom**

**41. First-Quarter Typewriting.** For you if you have had no previous training in typewriting. Designed to develop a thorough knowledge of the keyboard and machine parts. Personal-use typing problems, centering, letter styles. (2F, W, S) **Donavan**

**42. Business Typewriting.** For you if you have had previous training in typewriting. Practice in typing letters, envelopes, manuscripts, business forms. (2F, W, S) **Lundstrom**

**43. Secretarial Typewriting.** Typing of minutes, legal forms, business forms, rough drafts, stencils for duplication. (2F, W, S) **Lundstrom**

**45. Speed Building Type.** Remedial typewriting, with emphasis on improvement of accuracy and speed. (1F, W, S) **Donavan**

**51. Introduction to Secretarial Training.** Designed to develop secretarial efficiency through study of requirements, duties, and personal qualities of a secretary, with special emphasis on personal appearance, manner, applying for and obtaining a position. Required of all lower-division secretarial science students. (2S) **Doty**

**65. Filing.** Training in alphabetical, numeric, subject, decimal, geographic, and soundex methods of filing. Indexing, coding, and filing of letters and cards. (3F, W, S) **Lundstrom**

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**69. Transcription.** Designed to develop skill and speed in transcription. You must be able to take dictation at not less than 60 words a minute and type at least 40 words per minute. Must be taken with SS 80. (1F, W)

Doty, Donavan

**70. Transcription.** Continuation of 69. Must be taken with SS 81. (1W, S)

Doty, Donavan

**71. Transcription.** Continuation of 70. Must be taken with SS 82. (1S)

Donavan

**75. First-Quarter Shorthand.** For you if you have had no previous training in shorthand; includes study of fundamentals of simplified Gregg shorthand. (3F, W)

Doty, Olsen

**76. Second-Quarter Shorthand.** Continuation of course 75. Introduction of new-matter dictation. (3W, S)

Doty, Olsen

**77. Third-Quarter Shorthand.** Continuation of course 76. Intensive practice in new-matter dictation. (3F, S)

Olsen, Doty

**80. Intermediate Shorthand.** For you if you have had previous training in shorthand and are able to take dictation at not less than 60 words a minute and type at least 40 words a minute. Includes review of the theory of simplified Gregg shorthand and development of new vocabulary. You must register for Transcription 69. (3F, W)

Olsen, Donavan

**81. Intermediate Shorthand.** Continuation of 80. Must be accompanied by Transcription 70. (3W, S)

Olsen, Donavan

**82. Intermediate Shorthand.** Continuation of 81. Must be accompanied by transcription 71. (3W)

Olsen, Donavan

**85. IBM Machine Operation.** Basic principles of IBM accounting. Operating features and machine functions of key punch, verifier, sorter, interpreter, reproducing punch, collator, and accounting machines. Two lectures, one lab. (3F, W, S)

Bell

**86. IBM Machine Operation.** Wiring and operation of accounting machine and reproducing punch. Prerequisite: Applied Statistics 75. Two lectures, one lab. (3W)

Bell

**87. Key punch Speedbuilding.** Three one-hour lab periods per week. Prerequisite: One year of typing. Time arranged. (1F, W, S)

Bell

**88. IBM Machine Operation.** Job planning and procedure development. Prerequisite: Applied Statistics 76. Two lectures, one lab. (3S)

Bell

**92. Business Machines.** Basic training in use of ten-key adding machines, full-keyboard

adding listing machines, and rotary calculators. (2F, W, S)

Lundstrom, Olsen, Donavan

**94. Key-Driven Calculator.** Practice in addition, multiplication, subtraction, and division on key-driven calculators and application of the machines to such business computations as percentages, discounts, decimal equivalents, and constants. (2F, W, S)

Olsen

**96. Posting Machines.** Application of the ten-key and full-keyboard bookkeeping machines to business and financial institutions. (2F, W, S)

Olsen

**167. Office Practice.** Training in use of dictating and transcribing machines, spirit duplicator, mimeograph, mimeoscope. (2F, W, S)

Doty

**170. Statistical Typewriting.** For majors in business administration, economics, and secretarial science. Practice in setting up charts, tables, and reports. Prerequisites: Sec. Sci. 41, 42, 43, or equivalent. (2S)

Lundstrom

**175. Office Management.** Emphasis on principles of office management, duties and responsibilities of the office manager, types of organization, methods of control, office arrangement and equipment, job analysis, selection, employment, and training of employees. Prerequisites: B.A. 2, Econ. 51, 52. (3F)

Tezak

**179 Methods of Teaching Typewriting and Bookkeeping.** Recent developments and practices in teaching of typewriting and bookkeeping. Analysis of objectives and laws of learning, organization of material, texts, standards of achievement, and methods of presentation. (3W)

Doty

**180. Teaching Shorthand.** Methods and trends in teaching shorthand, and observation and practice in shorthand classes for those preparing to teach. Consult instructor before registering. (3F)

Doty

**183, 184, 185. Advanced Speed Course in Shorthand.** 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. Emphasis on increasing shorthand speed through speed phrases and reporting shortcuts. Practices in advance transcription. (3F, 3W, 3S)

Doty

**186, 187. Secretarial Procedures.** Office routines are studied, with special emphasis on use of reference books, transportation and travel, use of telephone, telegraph, and cablegram service, financial records, writing for publication, minutes and meetings. (3W, 3S)

Doty



189. **Practice in Business Education.** Provides opportunity for planning and development of practical or creative projects in Business Education. Experienced teachers and students who are registered for teacher training are encouraged to build projects around actual school situations. Not taught 1958-59. (1F, W, S)

190. **Seminar in Business Education.** A reading and research course for you if you are majoring in business education problems. Not taught 1958-59. (2S)

200. **Research in Business Education.** Time and credit arranged. Not taught 1958-1959. (F, W, S)

## Combination Major in Secretarial or Clerical Practice and Home and Family Living

This curriculum is designed for women who desire sufficient secretarial or clerical training to provide professional opportunities outside the home as well as a basic training for home and family life.

Either the Secretarial or Clerical program may be combined with the Home and Family Living program. Completion of these requirements, in addition to University and group requirements, leads to a Bachelor of Science degree.

### Secretarial

SS 30	Business Communications .....	3
SS 51	Intro. to Sec. Training .....	2
SS 43	Secretarial Type .....	2
SS 65	Filing .....	3
SS 69, 70, 71	Transcription .....	3
SS 80, 81, 82	Intermed. Shorthand .....	9
SS 92	Business Machines .....	2
SS 167	Office Practice .....	2
SS 175	Office Management .....	3
SS 186, 187	Secretarial Procedures .....	6
*BA 1	Accounting .....	4

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\*It is recommended that BA 2 also be completed. 4 hours.

### Clerical

SS 30	Business Communications.....	3
SS 42	Business Type. ....	2
SS 43	Secretarial Type. ....	2
SS 51	Intro. Secretarial Training .....	2
SS 65	Filing .....	3
SS 92	Business Machines .....	2
SS 94	Key-driven Calculator.....	2
SS 96	Posting Machines .....	2
SS 167	Office Practice .....	2
SS 175	Office Management .....	3
SS 186, 187	Secretarial Procedures .....	6
BA 30	Business Mathematics .....	3
PS 11	Commercial Law .....	3
BA 1	Accounting .....	4

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### Home and Family Living

CD 67	Child in the Family .....	3
CD 68	Preschool Laboratory .....	2
CD 155	Problems in Marriage & Family Living .....	4
CT, RA 4	Clothing Selection .....	2
CT, RA 8	Basic Clothing Construction ..	3
CT, RA 24	Elementary Textiles .....	3
F, H 5	Principles of Nutrition .....	3
F, H 24	Food Selection & Preparation .....	5
F, H 25	Meal Planning .....	3
HA 100	Household Equipment or 65 Housing .....	2 or 3
HA 149	Home Management .....	3
Upper Division Home and Family Living Elective, Minimum .....		6

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*Ideas are the greatest instruments of power.*

# Department of Economics

PROFESSORS *E. B. Murray*, HEAD, *V. L. Israelsen*; ASSOCIATE PROFESSOR *L. J. Arrington*; ASSISTANT PROFESSOR *G. F. Marston*.

Office in Main 316

The Department of Economics offers both the Bachelor of Science and Master of Science degrees.

## Economics Courses

**50. General Economics.** An abbreviated course in General Economics for students in certain fields of Engineering. (3W, S) **Staff**

**51. General Economics.** For any university student regardless of field of specialization. Emphasizes the understanding of principles and institutions underlying operations of the economic system. (5F, W, S) **Staff**

**52. Economic Problems.** Continuation of Economics 51. The emphasis in this second course is on the economics of a competitive market; commodity markets and factor markets are analyzed. (5F, W, S) **Staff**

**106. History of Economic Thought.** A critical study of the origin and the development of the economic theories of leading thinkers in Western Civilization from 1750 to the present. (3F) **Israelsen**

**107, 108. Intermediate Economic Theory.** Critical analysis of present-day price, distribution, and income theory. Required of all students majoring in Business Administration, Agricultural Economics, and Economics. Prerequisites: Economics 51, 52 or Agricultural Economics 53. (3W, S) **Israelsen**

**125. Trade-Unionism and Collective Bargaining.** Development, structure, function, government, and philosophy of trade unions in United States; making and administering collective agreements; impact upon the economic and political system. (3F) **Murray**

**126. Trade-Unionism and the Law.** The legal frame-work of the trade union activity; restrictive, permissive, and promotional legislation; the judiciary and labor. (3W) **Murray**

**127. Social Security.** Survey of the main divisions of social security legislation; workmen's compensation, legal minimum wage, regulation of hours, unemployment compensation, old age insurance, family wage systems, and health insurance. (3S) **Murray**

**135. Transportation Economics.** The emphasis is upon railroad transportation in the United States. Economic principles that underlie

rate structures and work of regulatory agencies. (3W) **Arrington**

**139. Economics of Security Markets.** Analysis of organization and operation of stock and bond markets, security speculation, brokerage houses, exchange relations with other institutions, security price behavior, exchange regulation. (3F) **Staff**

**140. International Economic Relations.** Basic economic relationship between industrial nations, trade restrictions, international debt and finance and means of promoting progress based on sound economics. Prerequisites: Economics 51, 52. (3F) **Israelsen**

**143. Economy and Trade of Latin America.** Influences exerted by Latin America on world trade. Alternates with Economics 140. (3F) **Staff**

**145. Economics of Consumption.** Deals with personal and group expenditure, standards of living, budgets, variations in consumption. (3W) **Staff**

**147. Public Utilities.** A study of the characteristics of public utilities, regulatory commissions, rate structures, rate discrimination, finance, and rates of returns. **Israelsen**

**150. Economic Organization and Development.** A study of the types of economic system in capitalist, socialist, and communist countries; of the theories upon which they are based, and the alternative methods of promoting economic development. (3S) **Arrington**

**155. Principles of Taxation.** Principles involved in establishing the general property tax, income tax, death taxes, taxes upon business, social insurance taxes. Effects of taxes in the American Economy. War and postwar finance. Special tax problems of Utah. (3W) **Israelsen**

**165. Money and Banking.** Development of our present monetary and banking system, a critical analysis of central banking. Prerequisites: Economics 51, 52. (3F) **Israelsen**

**170. Economic Development of the United States.** Development of agriculture, industry, labor, transportation and finance from colonial times to the present. (5W) **Arrington**

**171. Business Cycles.** The economics of cyclical fluctuations. Critical examination is made of the more significant theories offered in explanation of the cycle. A survey of existing and proposed means of control. (3W) **Staff**

**174. Business and Government.** The role of the giant corporation in modern economic life; public regulations of monopoly and competitive practices; international and domestic cartels; alternative policy toward business. (3F) **Arrington**

**180. Income and Employment.** Analysis of factors determining the general level of output, income, and employment; discussion of public policies designed to maintain full employment and high production. (2S) **Arrington**

**200. Research in Economics.** Special investigations carried on by graduate students. Credit granted according to work done. (F, W, S) **Staff**

**201. Readings and Conferences.** Time and credit arranged. (F, W, S) **Staff**

**205. Price Theory.** A critical review of a few major topics in price and distribution theory. Open to graduate students and seniors with adequate preparation. (2F) **Murray**

**206. Income Theory.** A comprehensive review of the literature and methods of macroeconomics, and a study of the public policies based thereon. Open to you if you have adequate preparation. (2W) **Arrington**

**207. Problems in Economic Theory.** A review of current literature in selected fields of economics. Open to graduates and seniors with adequate preparation. (2S) **Staff**

**209. Problems in Economic Research.** An intensive study of the methods, tools, and objectives of economic research: statistics, economic analysis, and economic history. Permission of instructor required. (2W) **Arrington**

**211. Literature of Economics.** An intensive study of the bibliographical materials and literature of economics. Permission of instructor required. (2W) **Israelson**

**212. Graduate Seminar in Industrial Relations.** Application of principles and practices of American trade-unionism brought to light through individual and group research project: analysis and evaluation of current issues in labor activities. (2W) **Murray**

# Department of History and Political Science

(History, Political Science, Pre-Law, Social Science)

PROFESSORS *M. R. Merrill*, HEAD, *J. E. Ricks*, *J. D. Brite*; ASSOCIATE PROFESSORS *W. B. Anderson*, *S. G. Ellsworth*, *M. J. Harmon*, *Edwin L. Peterson*; LECTURER *C. Olsen*.

Office in Main 313

## History

If you wish to major in History you should complete History 4, 5, 6, 13, 14, and other courses recommended by your adviser. If you intend to pursue graduate study you should complete two years of French or German.

If you minor in History you

should consult a faculty member in the department for specific recommendations.

## History Courses

**4. Ancient World Civilization.** The cultural history of the world from the earliest times to the sixteenth century. The Near and Far Eastern civilizations with emphasis on the European heritage: Greece, Rome, Christianity, the Middle Ages, Renaissance and Reformation. (5F, W, S) **Ellsworth**

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**5. Modern World Civilizations.** The cultural history of the world from the sixteenth century to 1850. Emphasis on European civilization and its spread in the world—the Americas, the Near and Far East. (5W, S) **Brite**

**6. Recent World Civilization.** The cultural history of the world from 1848 to the present. The entire world picture for the past 110 years is presented. (5S) **Brite, Ellsworth**

**8. Recent European History.** From the Treaty of Versailles in 1919 to the present, emphasizing the problems following World War I, the causes of World War II, and the period since 1945. (3W) **Brite**

**9. Current World Affairs.** An historical inquiry into the evolution and development of the United Nations organizations, the domestic problems and foreign relations of the major world powers since 1945. (1W) **Ellsworth**

**10. American Civilization.** The American heritage studied through a characterization of major periods and movements, the development of the institutions and social ideas of the United States. (3F) **Ellsworth**

**13. Early United States History.** Includes 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. (5F, W, S) **Ricks**

**14. Modern United States History.** Reconstruction, industrialism, the last frontier, the agrarian revolts, imperialism, the eras of reform, American culture, the new democracy and the two World Wars. (5F, W, S) **Ricks**

**History 21. The Americas to 1763.** Geography, pre-Columbian peoples, conquest and colonization by European powers, international rivalries, political, social and economic developments. (3W) **Ellsworth**

**History 22. The Americas since 1763.** The eve of the revolutions, the Anglo-American and Spanish-American revolutions, early development of the United States and Latin American republics, Brazil and Canada, their political, social, and economic development, their role in the contemporary world. (3S) **Ellsworth**

**34. English History.** English history from the earliest times to the present day. Particularly valuable for English majors and pre-legal students. (5F) **Brite**

### History of Europe

**105. Greek History.** Greek civilization to the Roman conquest, 146 B. C. Emphasizes political, social, intellectual and artistic developments and contributions. (5W) **Ellsworth**

**106. Roman History.** From the earliest times to the decline of the Roman Empire in the West in the fifth century A.D. (5S) **Ellsworth**

**111. Medieval Europe.** (500-1500 A.D.). Political, economic, social and cultural developments during the Middle Ages. (3W) **Brite**

**124. Renaissance and Reformation.** (1250-1600). (5F) **Brite**

**126. French Revolution and Napoleon.** (1789-1815). (3W) **Brite**

**127. Nineteenth Century Europe.** Political and economic developments between 1815 and 1914. (3S) **Brite**

**138. The History of Russia.** From the earliest times to the present day. (3W) **Brite**

### History of the United States

**135. History of the Far West.** Deals with the region from the Rockies to the Pacific Coast, with special emphasis upon the Intermountain West. (5S) **Ricks**

**137. History of Utah.** Geography and native peoples, early explorations, political, social and economic developments to the present with emphasis on territorial period. (3F) **Ellsworth**

**143. The Jacksonian Era.** Political, economic and cultural developments 1815-1850. American society, industry and commerce, labor, cultural developments, reform movements, the westward movement, extension of the suffrage and the coming of democracy. (3W) **Ellsworth**

**144. The Civil War and Reconstruction.** (3W) **Ricks**

**152. The American Revolution.** The background, philosophy, nature, campaigns and consequences of the American Revolution. (3W) **Ricks**

**156. Social History of the United States.** The development of the patterns of American life, social ideas, education, religion, science, literature and the arts, studied around a framework of major thought forms. The relation of these developments to public policies. (3F) **Ellsworth**

**171. Constitutional History of the United States.** (5W) **Ricks**

**175. History of American Democratic Thought.** American democratic thought from the Revolutionary War to the present. (3W) **Ricks**

## History of Asia

**176. History of the Far East.** The emphasis will be on China, Japan and Russia since 1900. (3S) **Brite**

**193. Bibliography and Writing of History.** Undergraduate professional course for you if you desire special training in any type of historical research. Required of all seniors majoring in History. (3F) **Ellsworth**

**211. Thesis.** For graduate students. Time and credit arranged. (F, W, S) **Staff**

**229. Seminar.** (3F, W, S)

**239. Readings and Conference in Special Areas.** (Arr. F, W, S) **Staff**

# Political Science

If you are majoring in Political Science you are expected to have your course schedule approved by the head of the department for at least six quarters prior to graduation. Exceptions may be made by the department faculty.

## Political Science Courses

**1. Government and the Individual.** The course proposes to introduce the student to the political world of American democracy. Totalitarian governments and the philosophies of fascism and communism that form the theoretical bases of these regimes are also studied. Democracy as practiced in the United States and Great Britain is contrasted with these systems. (5F, W, S) **Merrill**

**10. American National Government.** The basic course of the department. It is highly desirable that this course be taken before upper division courses in Political Science. (5F, W, S) **Staff**

**11, 12, 13. Commercial Law.** Course 11 is a general survey intended for you if you are interested. It is also an introductory course for students who take additional Commercial Law courses. Courses 12 and 13 are devoted to a comprehensive study of the law of contracts and agency. Open to all students of sophomore standing or above. (3F, 3W, 3S) **Olson**

**15. American State and Local Government.** The emphasis is on Utah state, municipal, and county governments. It follows American government. (3W) **Anderson**

**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. (3F) **Staff**

**75. Latin American Governments.** In addition to a study of Latin American governments, attention is given to the relations between these countries and the United States. (3W) **Porter**

**101. American Foreign Policy.** The place of the United States in the world of nations as affected by our traditions, interests, and interpretations of international affairs. (3F, S) **Merrill**

**102. International Political Relations.** Psychological, economic, racial, and other obstacles to international cooperation, as exemplified in recent events. Attention is given to various proposals that attempt to solve the dilemma of our time. (3W) **Merrill**

**104, 105, 106, 107, 108. Commercial Law.** Course 104 studies the law of negotiable instruments, 105 and 106 include study of the law of bailments, sales and personal property, partnerships, corporations, and bankruptcy. Courses 107 and 108 include the law of real property, including estates, deeds, conveying, abstracts of title, mortgages, wills. Courses 105 and 106 alternate with 107 and 108. 107 and 108 will be given in 1957-58, and 105 and 106 will be given in 1958-59. Prerequisites: Political Science 11, 12, 13 or the consent of the instructor. (3F, 3W, 3S) **Olson**

**110. Basic Problems in International Relations.** Examines current international developments with emphasis on their relation to the United States. (3S) **Merrill**

**111. International Organization.** Examines briefly the attempts to achieve some type of international organization. Major emphasis is on the League of Nations and United Nations, including such organizations as United Nations Educational Scientific and Cultural Organization, World Health Organization, Food and Agricultural Organization, International Labor Organization, the World Bank, and the World Monetary Fund. (3S) **Anderson**

**117, 118, 119. American Political Thought.** A survey of American political ideas and the men who developed them. The historical approach is used, beginning in colonial times and carrying the development of American political thought through to the present. Emphasis is on ideas that have been significant in shaping the form and actions of American government today. Students may register for one, two, or three quarters. (2F, 2W, 2S) **Harmon**



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**125. Political Parties and Practical Politics.** Organization and practices of political parties. (3F) **Harmon**

**126. Soviet Government and Policies.** Designed to present the structure and functioning of Soviet government and the Communist party system. Attention is also given to the theoretical background of government and party practices in modern times. (3W) **Harmon**

**127. Constitutional Law.** A foundation course in American Constitutional law. The case method is used extensively. Prerequisite: Political Science 10. (5F) **Anderson**

**128. International Law.** A basic course in the law of nations. You should have had at least one course in international relations or foreign policy. (5S) **Anderson**

**129. Public Administration.** Introduction to study of public administration for you if you are contemplating public service careers. The role and techniques of management in public enterprise, the organization, legal bases, planning, staffing, personnel, finance and public relations of modern government. (5W) **Anderson**

**131. Administrative Law.** Constitutional limitations, legislative supervision, and judicial control of administrative agencies, and the forms of administrative action appropriate for American economic and political institutions. (3S) **Anderson**

**140. American Legislation.** Includes a study of the organization and procedure of legislative bodies and the influences at work in and the character of the output of national and state legislature. The laboratory methods of approach are used as far as is feasible. Parliamentary law is emphasized. (3W) **Anderson**

**145, 146, 147. History of Political Thought.** Course 145 covers political thought from its beginnings in the Greek period to Machiavelli. Course 146 carries on the study from Jean Bodin to Bentham. Course 147 emphasizes the modern period and gives consideration to democratic, fascist, and communist theories. (3F, 3W, 3S) **Harmon**

Students may register for the courses separately.

**180, 181, 182. Current Political Problems.** You may take any quarter without the preceding quarter or quarters. If you are a lower division student you must receive the consent of the instructor. (2F, 2W, 2S) **Merrill**

**201. Research in Political Science.** Time and credit arranged. (F, W, S) **Staff**

**203. Readings and Conferences.** Time and credit arranged. (F, W, S) **Staff**

**205. Methods in Political Science.** Methods the political scientist must use that are common to all sciences, the particular problems with which the social scientist is confronted, and their application to special problems of political science. (5W) **Staff**

**207, 208, 209. Seminar in Political Science.** A two-credit course each quarter with emphasis on one branch of political science each quarter. Only seniors and graduate students with a major in one of the social sciences may register. (2F, 2W, 2S) **Staff**

**211. Thesis.** For graduate students preparing a master's degree thesis. Time and credit arranged. (F, W, S) **Staff**

**250. Graduate Social Science Seminar.** For graduate students in the social sciences. Programs and procedures devised by social science graduate students and department staffs. (1W)

## Pre-Law

The University is very interested in students who plan to enter the profession of law. The Institution has been very successful in preparing students to enter professional law schools. The success of these students both in the professional training period, and thereafter, indicates the high quality of the preparation.

Some law schools admit only college graduates. Others admit students with lesser training. College graduation is generally recommended even though it may not be required for admission.

It is recommended that if you plan to enter law school, you take the Law School Aptitude test, several months prior to the time entrance is desired. Many law schools now require that test scores be included in the applications. Applications for the test should be made to the Graduate School office on the campus.

Below is listed a recommended curriculum for pre-law students.

This has been carefully prepared to conform to the recommendations of the law schools themselves. Some modification is possible. Pre-law students should register with members of the political science staff who function as advisers to these students.

### Requirements for Pre-Law Majors

American Institutions: P. S. 10 and P. S. 140 are required. Optional selections from the following: P. S. 15, 125, 129, 180, 181, 182. Total minimum hours 15

Comparative Government: Optional selections from the following: P. S. 70, 75, 126. Total minimum hours 3

International Relations: Optional selections from the following: P. S. 101, 102, 111. Total minimum hours 3

Political Thought: Optional selections from the following: P. S. 117, 118, 119, 145, 146, 147. Total minimum hours 5

Public Law: Optional selections from the following: P.S. 127, 128, 131. Total minimum hours 5

*Areas of Emphasis in Other Departments.* The lawyer needs to be familiar with as many areas of hu-

man endeavor as possible. It is especially recommended that the pre-law student emphasize the following areas: English, American and European History, English and American Literature, Psychology, and Economics. He should be a skilled typist and familiar with accounting procedures.

## Social Science Courses

1. **General Social Science.** A basic general education course for those interested in a synthesis of the social science disciplines. (5F, W, S) **Peterson**

5, 6, 7. **General Geography.** Europe, Afro-Asia, The Americas. A survey of geography with special emphasis on the social viewpoint. Attention is directed towards the influence of geography on domestic and international problems: cultural, ethnic and linguistic backgrounds will be examined, boundaries, population trends, national economic and governmental systems will be studied as they may reflect foreign policy. Students may register for one, two, or three quarters. Fall quarter 5 and 6, winter quarter 6 and 7, spring quarter 5 and 7. (3F, 3W, 3S) **Peterson**

# Department of Sociology

## (Sociology and Social Work)

PROFESSORS *R. W. Roskelley*, HEAD, *D. Carter*; ASSOCIATE PROFESSORS *T. R. Black*, *C. Fredrickson*, *C. J. Skidmore*; ASSISTANT PROFESSORS *W. A. DeHart*, *E. H. Lewis*.

Office in Main 212

## Sociology

If you are a major in Sociology you must meet the group requirements for graduation. In addition, you are expected to complete a minimum of 47 credits in Sociology

distributed in the following fields: General and Historical, 5 credits; Social Organization, 6 credits; Social Problems, 6 credits; Social Psychology and the Family, 6 credits; Social Research and Statistics, 3 credits; Seminar, 6 credits; Cultural Anthropology, 3 credits; So-

cial Work, 9 credits; Population and Industrial Sociology, 3 credits.

Either Sociology 10 or 70 is prerequisite for all upper division courses in Sociology; also Sociology 40 for 140; 60 for 160.

## Graduate Study

The Department of Sociology offers courses leading to the Master of Science degree. Research is promoted through departmental relationship with the Agricultural Experiment station and with federal agencies.

*Doctor of Philosophy Degree.* Institutional requirements for the PhD degree are explained in the Graduate School section. This degree is offered in the Department of Sociology through collaboration with closely related departments in the social sciences.

## Sociology Courses

5. **American Culture.** Basic beliefs, values, customs, and institutions of the American people. Also a study of governments, educational and other agencies consciously concerned with improvement of American life. (3F) **Roskelley**
10. **Rural Sociology.** Background information which will lead to a more enlightened rural and urban citizenry through better understanding of and plans for resolving rural problems dealing with organization, institutions, social processes, and population. (5F, W, S) **Roskelley, Black**
40. **Social Psychology I.** Personality development among social classes and peoples. Analysis of crowds, social movements, social conflicts and other collective behavior; ideologies and institutions. Prerequisite: Sociology 70 or Psychology 53. (3F) **DeHart**
60. **Courtship, Marriage and the Family.** Designed to help all students understand the social and emotional factors in personality development, courtship, mate selection, and marriage adjustment. (3F, W, S) **Skidmore, Fredrickson, Black, Carter**
70. **Introductory Sociology.** Open to students in all departments. Emphasis upon developing understanding of the social world, and how social experience contributes to personal development. Sociology 70 or 10 is prerequisite to all upper division classes in sociology and social work. (5F, W, S) **Staff**
75. **Effective Community Living.** A study of the community and of tools used to understand interpersonal relations within groups and between groups that jointly constitute the community. (3S) **Fredrickson**
100. **Educational Sociology.** A study of the group and human relations factors within the school system, and between the school system, the home, and the community. (3W) **Black**
110. **Utah Social Problems.** Present-day problems in populations, migration, housing, insurance, manufacturing, temperance, and safety. (3) **DeHart**
130. **Introduction to Cultural Anthropology.** Study of the attitudes, ideas, behavior, social organization, and material results of selected primitive and contemporary cultures. (3F) **Black**
140. **Social Psychology II.** Relationship between personality development and ideological patterns among various social classes and cultures. Prerequisite: Soc. 40. (3S) **Staff**
141. **Rural Community Organization and Leadership.** Analysis of forces and procedures at work in developing community organization, with special emphasis on techniques of training leaders to help make the community more effective. (3S) **Roskelley**
144. **Women Today.** Women's relation to men, to children, to employment and her perception of herself in her several roles. (3S) **Fredrickson**
145. **Alcoholism.** See P. E. 145. (3S) **Nelson**
153. **History of Social Thought.** Development of social thought from early periods is traced to August Comte. From this point, important developments in Europe and Americans are studied, with emphasis on American thought. (5W) **Roskelley**
154. **Population Problems.** The nature of population growth and decline studied in reference to international, national and local social problems. Significance of present population distributions, characteristics, and trends. (3W) **Roskelley**
156. **Social Institutions.** Similarities and differences in 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. (3) **DeHart**

**158. Human Relations in Industry.** Designed to extend understanding of the human relations skills and philosophy needed in modern-day management practices. The social factors influencing work behavior will be studied. (3F) **DeHart**

**160. Family Relations.** The social-emotional development of the child in the family, marital adjustment, social-culture difference in family behavior, problems, ideological considerations. (3F) **Skidmore**

**161. Modern Social Problems.** An approach based on adjustment to instruments of change as means of minimizing disorganization. (3W) **Fredrickson**

**162. Instructional Problems in Family Life Education.** Methods, material, and content for teachers dealing with the social, emotional and cultural phases of Family Life Education. (3S) **Skidmore**

**163. Marriage Counseling.** The philosophy, principles, and techniques of pre-marital and marriage counseling. (3W) **Skidmore**

**170. Juvenile Delinquency I.** Nature and extent of juvenile delinquency. Theories of causation and methods of prevention of delinquency in children. (3W) **Staff**

**172. Juvenile Delinquency II.** Origin and operation of the Juvenile Court. Detention, probation, placement, and institutional care, as methods of rehabilitation and correction. (3W) **Staff**

**174. Introduction to Criminology.** Extent and nature of crime, and various factors related to criminal behavior. Theories of crime causation, and methods of prevention and treatment. (3W) **Staff**

**180, 181, 182. Current Sociological Problems.** (1F, 1W, 1S) **Staff**

**190. Seminar in Sociology.** Time arranged. Required for you if you are a major in Sociology. (1F, W, S,) **Staff**

**201. Research in Sociology.** A project for original study is organized, and field work is carried on under supervision. Prerequisite: Soc. 287. Credit arranged. (F, W, S) **Staff**

**202. The Study of Society.** Basic principles

of sociology are considered in their theoretical and scientific settings, as a body of facts, a method of investigation, and an explanation of associate living. (5W) **Black**

**203. Independent Readings in Sociology.** Readings and conferences on topics selected by the student. Credit arranged (F, W, S) **Staff**

**207. Graduate Seminar.** Short subjects within the field of Sociology and pertinent to but not available in regular courses are selected for study. (2) **Staff**

**210. Advanced Rural Sociology.** Analysis of major developments in rural social thought, research and application of both toward solution of social problems throughout the world. (3) **Roskelley**

**241. Rural Organization.** Social organization in areas larger than the local community, district, state, regional, national and international. (2) **Roskelley**

**287. Methods of Social Research.** Formulating problems, collecting, analyzing, and interpreting data in social research. (3F) **Roskelley**

## Social Work

The demand for social workers exceeds the qualified personnel available for employment. The opportunity in social work is steadily growing, not only because the mounting complexities of modern life bring about an increasing number of personal difficulties, but because methods of constructively dealing with these difficulties are becoming more fully known. As the professional content of positions in social work has become clearer, added emphasis has been given to adequate education and training.

With the establishment of the Council on Social Work Education, in July, 1952, the graduate schools and undergraduate departments of social work joined forces with other segments of the profession to provide for more effective recruitment and training of a larger number of persons for the expanding positions in social work. Undergraduate education in social work is not regarded as a substitute for graduate training, but as the best preparation for employment in those positions for which graduate training is not required, as well as the best preparation for later undertaking graduate study in social work.

## 108 USU — College of Business and Social Sciences

More than 60 undergraduate departments of social work have been approved by the Membership committee for constituent membership in the Council on Social Work Education, of which this department is a charter member.

*Course requirements for a major* leading to a B.S. degree in social work are: S. W. 165, 173, 175, and S. W. electives, 12 hours; Economics 127; Political Science 129; Psychology (9 hours selected from:) 105, 121, 123, 140, 161, 183; Sociology (12 hours selected from:) 130, 141, 160, 161, 170, 172; Child Development 67.

During the freshman and sophomore years, you should take the following courses, in addition to filling the general group requirements for graduation: (Most of these courses may be applied towards the Social Science group requirement) Economics 51; Political Science 1 or 10; Psychology 53; Sociology 10, 70, 40.

### Social Work Courses

**50. Social Welfare Agencies.** An introductory study of the agencies and institutions which provide social services such as child welfare, family counseling, school social work and public assistance. (3W) **Lewis**

**162. Mental Hygiene.** Social and cultural changes that have given rise to problems of adjustment. Reactions to stress: "preventive" growth and adaption. (3W) **Lewis**

**165. Culture and Personality.** The process of personality development, with emphasis on the influence of culture, social class, and the nature of personal experience. (3S) **Roskelley**

**173. The Field of Social Work.** Contemporary social work as it is divided into the following areas of activity: social casework, social group, community organization and social action. Objectives, processes, and personnel requirements of social work agencies. Social Work majors should take S. W. 175 concurrently and whenever possible, S. W. 173 prior to other S. W. classes. (3F) **Lewis**

**174. Introduction to Case Work.** Theories and practices of social case work, with emphasis on problems and techniques of interviewing. (3W) **Lewis**

**175. Introduction to Field Work.** Acquaints students with various agencies dealing with social work and related areas, includes field trips. You should take concurrently with S. W. 173. (2F) **Lewis**

**177. Social Treatment of Children's Problems.** Analysis and treatment of problems of children. (3S) **Lewis**

**178. Adolescence.** Social adjustment of the adolescent, as influenced by the nature of the culture in which he lives. Methods of working with adolescents. (3) **Staff**

**180. The Dynamics of Groups at Work.** Group processes are studied from the point of view of improving individual participation as members and leaders of groups. The focus will be on social action as a group process. (3S) **DeHart**

**182. Children in Institutions.** Principles underlying care and treatment of children in voluntary or non-custodial institutions. Development and trends in institutional care. (3S) **Lewis**

**195. Social Work Seminar I.** A study of social work publications and other source material applicable to the field. Required of majors in Social Work. (1W) **Lewis**

**203. Independent Readings in Social Work.** Readings and conferences on topics selected by the students. Credit arranged. (3F, W, S) **Staff**

**200. Social Case Work I.** Principles and methods of social case work. Investigation, diagnosis, and treatment. (3F) **Lewis**

**240. Community Organization.** Processes operating in rural and urban communities and development of means for co-ordinating them. (3W) **Staff**

**250. Public Welfare Services I.** Analysis of the operation of a modern public welfare services program, including: public assistance, social security, public services for children. (3F) **Lewis**

**270. Child Welfare.** Evolution and current developments in programs for meeting needs of children. Consideration is given to substitute parental care and adoptions, to child labor laws, juvenile courts, to problems of the child of unmarried parents, and the handicapped and the exceptional child. (3S) **Lewis**

**287. Methods of Social Research.** See Sociology 287. (3F)





## *College of Education*



**John C. Carlisle, Dean**

## College of Education

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Master of Science

Doctor of Education

Doctor of Philosophy

# College of Education

John C. Carlisle, Dean

Office in Main 179

The College of Education includes the Departments of Agricultural Education; Education; Fine Arts; Health, Physical Education and Recreation; Psychology and Guidance; also, a program in Library Science. The Department of Fine Arts provides for majors in music, theatre arts, and visual arts. A primary function of all the departments is the preparation of teachers, administrators, supervisors and other professional personnel for the public schools. In addition each department offers courses contributing to general education and courses designed to supplement the major work of other departments in the University.

*The Bachelor of Science degree*, with a major in elementary or in secondary education, is designed for students preparing to teach in elementary or in secondary schools. Students majoring in other departments of the University who wish to prepare for teaching are admitted to the teacher education curricula upon formal approval of their application by the Admissions Committee of the College of Education. Subsequently, they are assigned an adviser in education who cooperates with the adviser in the student's departmental major.

The University offers complete programs of teacher education in all phases of public school work. Facilities for student teaching have been carefully chosen. The Nursery School, operated on the campus by the Department of Family Living and Child Development in

the College of Home and Family Living, is especially concerned with the pre-school child. Teachers in Home Economics, Agricultural Education, and Industrial and Technical Education do their student teaching under the direction of the departments concerned in selected schools throughout the state and under supervision of University supervisors.

To serve as a laboratory in the preparation of kindergarten and general elementary teachers, the University has its own elementary school, the Edith Bowen School, located on the campus. It includes kindergarten and grades one to six inclusive. The teachers in the school, selected especially for their fitness to serve in the teacher education program, are regular members of the University faculty. The Edith Bowen School, in addition to its function as a center for teacher education, serves the College of Education at a laboratory in which child growth and development are studied and desirable school practices are developed.

*Students preparing for general secondary certificates* do their student teaching under the direct supervision of selected teachers in nearby junior and senior high schools. The University maintains contractual arrangements for these services. Students in elementary education also do part of their student teaching in selected public schools.

On the graduate level, programs

are offered for students who desire to meet requirements for administrative, supervisory or other advanced professional certificates. The MS, MEd, and the EdD degrees are offered.

The College of Education is a member of the American Association of Colleges for Teacher Education and is accredited by the National Council for Accreditation of Teacher Education.

## Teacher Certification

The College of Education is designated by the Utah State Department of Public Instruction as its official representative in administering certification requirements for regular students of the University.

The University provides training to prepare the students for any of the professional certificates issued by the Utah State Department of Public Instruction.

Specific requirements for each certificate may be obtained from the office of the Dean of the College of Education or from the department in which the major work is offered.

## Teacher Placement Service

The University is interested in placing its graduates in professional positions. To accomplish this purpose in the College of Education, the teacher placement service has been organized. All students who qualify for teaching or other professional certificates are required to register with the bureau to facilitate the compilation of the proper credentials to be used in placement for the current and future years. Registration should be completed in the winter quarter or early part of the spring quarter.

# Department of Agricultural Education

PROFESSOR S. S. Richardson, HEAD.

## Office in Agricultural Science 121

Students preparing to teach vocational agriculture register in the Department of Agricultural Education. In the curriculum planned for training teachers of vocational agriculture, emphasis is given to practical farm experience, a broad background in the major fields of human knowledge, general training in agriculture, and a program of teacher training for youth and adults in the vocation of farming. This curriculum meets minimum requirements for the general secondary and vocational agriculture certificates as

set by the Utah State Board of Education. Counseling service is available to assist students in selecting courses throughout the four years of College work.

## Graduate Study

Opportunity is offered for research and graduate study in Agricultural Education through any major department in the College of Agriculture. Students planning to do graduate work should select a co-ordinated program of study in the Colleges of Agriculture and Education.

## Prescribed Course for Majors in Agricultural Education, Institutional and General Requirements

<b>Biological Science:</b>	<b>Cr. Total</b>
*Botany 24 .....	5
*Zoology 3 .....	5
Zoology 112 (Genetics) .....	5
*Bacteriology 10 or 70 & 71 .....	5 20
<b>Language and Arts:</b>	<b>Cr. Total</b>
*Environmental Planning .....	3
*Speech, or Music, or	
*Art or Literature .....	5 8
<b>English:</b>	<b>Cr. Total</b>
Basic Communications 1, 2, 3 .....	9
<b>Social Sciences:</b>	<b>Cr. Total</b>
*Agr. Econ. 53 .....	5
*Sociology 10 or 70 or	
*Political Science 10 or	
*History 14 .....	5 10
<b>Exact Science:</b>	<b>Cr. Total</b>
*Chemistry 10, 11, 12 .....	15
*Mathematics 34 .....	3
Radio 21, Physics 3 or 6 or 7,	
Geology 3 .....	4 22
<b>Total</b> .....	<b>69</b>

## Basic and Minimum Requirements in Agriculture, Agricultural Engineering, and Education

<b>Animal Industry</b>	<b>Cr. Total</b>
An. Hus. 10 .....	5
Elective .....	15 20
<b>Plant Industry</b>	
Agron. 56 (Soils) .....	4
Elective .....	16 20
<b>Agricultural Economics</b>	
Agr. Econ. 58 or 102, 63 .....	6
Elective .....	3 9
<b>Agriculture</b>	
Elective .....	11 11
<b>Agricultural Engineering*</b>	
Irrig. 10 .....	4
Elective .....	20 24
<b>Total</b> .....	<b>84</b>

\*Courses which meet lower division group requirements.

<b>Education</b>	<b>Cr. Total</b>
Education 112, 113, 114, 125, 126 .....	22
Psychology 100, 102 .....	6
Public Health 155 .....	4
Education 124 .....	3 35

## Total Minimum Requirements For B. S. Degree

Institutional and General .....	69
Agriculture .....	84
Education .....	35
Military Science & P.E. ....	6
<b>Total</b> .....	<b>194</b>

## Ag Education Courses

**112. Principles of Vocational Education.** Fundamentals in general and vocational education. Social and economic basis for vocational education. (3W) Richardson

**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. (3F) Richardson

**125. Methods of Teaching Agriculture.** Fundamental principles and practices of all teaching. Special attention is given to selection, organization, and teaching of subject matter and supervision of agricultural activities on the farm. (5W, S) Richardson

**126. Directed Teaching in Agriculture.** Student observation and teaching under supervision in approved local vocational agriculture departments. Student teachers leave the campus to train in selected high schools for a full teaching program for five or six weeks. (4-8 W or S) Staff

**151. Extension Methods.** For prospective home demonstration and county agricultural agents. History, objectives, organization and accomplishments of extension work in the United States. Farm and home problems, youth and adult education, and extension methods. (3) Richardson and Extension Staff

**225. Special Problems in Agricultural Education.** A consideration of needs of the individual and special types of service. For upper division and graduate students. (2-5F, S) Richardson



# Department of Education

PROFESSORS *J. C. Carlisle*, HEAD, *W. R. Borg*, *E. H. Himes*, *L. G. Noble*; ASSOCIATE PROFESSORS *C. D. Burke*,\* *E. M. Drake*, *B. C. Hansen*, *H. Sharp*, *E. S. Shaw*, *D. R. Stone*; ASSISTANT PROFESSORS *P. Budge*, *T. Hatch*, *G. S. Jacobsen*, *W. P. Lewis*, *D. J. Pugmire*, *E. W. Wright*; INSTRUCTORS *B. E. Murray*, *A. Olsen*, *I. Pedersen*, *B. Roberts*, *T. Taylor*, *E. Wiggins*, *J. F. Wiggins*.

Office in Main 179

The Department of Education is organized into two main areas: teacher education and graduate programs in elementary education, secondary education and education administration.

## Teacher Education

Teacher education offers programs of study leading to the Bachelor of Science degree in elementary education and in secondary education, and to completion of certification requirements for teaching in the elementary and secondary schools of Utah. If you are working toward a degree in either field you are assigned to a temporary faculty adviser who will assist you in planning your course of study. All students are required to take Introduction to Education (Education 50) in the sophomore year. During this class, guidance tests are administered and other selective admission evaluations are made. Students transferring to the University after the sophomore year may be excused from taking Education 50, but they must take the selective admission tests. You will not be admitted to student teaching in either secondary or elementary education unless your total grade point average is 2.0 or above, and your grade point average in the teaching major and minor and in

professional certification subjects, 2.5 or above.

### The Program in Elementary Education

To obtain the Bachelor of Science degree in elementary education and qualify for the Utah Teacher's Certificate for elementary schools you must meet the following minimum requirements:

(1) Courses designed to provide a liberal background. These must include a minimum of ten credit hours in each of the four basic fields of knowledge: biological sciences, physical sciences, language arts, and social sciences. In addition, six credit hours must be earned in the fine and/or practical arts.

(2) Thirty credit hours in one field of concentration, or 18 credit hours in each of two such fields. These fields of concentration should be related as closely as possible to curriculum areas of the elementary school.

(3) A major of 45 credit hours in professional study selected from the following divisions:

**Group I: Understanding the Child**—Minimum, 9 credit hours: Psychology 100\*, 123, 145, 183, Physical Education 84, Public Health 155\*, Speech 167, Child Development 67, Psychology 105.

**Group II: Understanding the School**—Minimum, 6 credit hours: Education 103\*, 114\*, 141, 182.

\*On leave.

\*Required courses.

**Group III: Curriculum and Methods**—Minimum, 12 credit hours: Education 104\*, 105\*, 108, 109, 110, 161, Psychology 108\*, 112, 127, Speech 118, Physical Education 182, Child Development 174.

Each student will be expected to take the following courses, or in lieu thereof, to demonstrate acceptable ability in the fields represented: Education 107, English 122, Music 150, Visual Arts 152, Physical Education 177.

**Group IV: Student Teaching**—Minimum, 12 credit hours: Education 106\*, 156, Child Development 175.

**Group V: Elective**—Other upper division Education and Psychology courses may be selected, with the adviser's help, for use in the Elementary Education major.

To qualify for elementary certification, in addition to completing secondary requirements you must complete a minimum of 15 credit hours of professional education courses specifically listed for elementary teachers, including: Elementary School Curriculum (Ed. 104), Student Teaching (Ed. 106a), and additional courses selected from Education 105, 107, 108, 109, Psychology 108, English 122, Speech 118, Music 150, Art 152, and Physical Education 182.

#### The Program in Secondary Education

To obtain the Bachelor of Science degree in secondary education and to qualify for the Utah Teacher's Certificate for secondary schools, you must meet the following minimum requirements:

(1) Completion of the University Lower Division requirements, including those in the four basic groups—biological sciences, exact sciences, language and arts, and social sciences.

(2) Completion of a teaching

major of not fewer than 36 credits, of which 15 credits must be Upper Division, and a teaching minor of 20 credits. The major and minor must each be in a specific subject taught in Utah secondary schools. In lieu of a teaching major and minor, a composite teaching major may be selected. Such a major consists of not fewer than 60 credits in two or more related subjects taught in secondary schools, with a minimum of 18 credits in any subject in the composite major. If you complete the composite major you will ordinarily graduate in the Department of Education. If you choose a single teaching major you will ordinarily graduate in the department offering that major. You should, however, apply to the Department of Education for admission to the teacher education program as early as possible in your college program.

(3) Completion of the 36 credit hours including the 33 required for the Utah Teacher's Certificate for Secondary Schools. The professional courses are to be taken within the following divisions:

**Group 1: Understanding the Pupil**—Minimum, 9 credits: Education 113, Psychology 100\* and 102\*, 105, 123, 140, 145, 202, P. E. 84; Public Health 155\*.

**Group II: Understanding the School**—Minimum, 6 credits: Education 111\*, 114\*, 141, 182.

**Group III: Student Teaching, Methods & Curriculum**—Minimum, 15 credits: Education 127\*, 129\*, 130\*, 161, 110, Psychology 102\*. A maximum of 5 credits in the following special methods classes may be counted in completing the 15 credit requirement in this Group or the total of 33 credits in professional courses, if taken in the field of one's teaching major or

\*Required courses.

minor: Art 151, English 124, Music 151-152-153, Speech 123, Secretarial Science 179 or 180, Physical Education 120, Mathematics 150.

To qualify for a secondary certificate, in addition to meeting requirements in elementary, you must (1) complete the requirements for a composite teaching major or for a teaching major and minor as indicated above; and (2) complete 15 credits required for certification in secondary education, including Psychology 102, Education 127 or 138, and Education 130.

## Graduate Programs in Education

(Administration, Elementary, Secondary)

Requirements for graduate degrees in Education are included in the statement of the School of Graduate Studies. Descriptions of the programs of study leading to these degrees are available at the office of either the Dean of the School of Graduate Studies or Dean of the College of Education.

## Education Courses

**50. Introduction to Education.** A study of the requirements for becoming a teacher and of the values of teaching as a profession. Experience in the course will assist each student to evaluate his potentialities for teaching and will assist the department in selective admission of candidates for the teacher education program. Required of all candidates for the teacher education curriculum. (2F, W, S)

Staff

**103. Principles of Elementary Education.** An introduction to the elementary school; its background and development, philosophy, personnel, practices, achievements, and its place in the American system of education. (4F, W, S)

G. Jacobsen

**104. Elementary School Curriculum.** Familiarizes prospective teachers with the nature and content of the elementary curriculum and factors that influence its development. In-

cludes an introduction to the teaching guides for Utah elementary schools, and considers some of the objectives, methods of instruction, teaching aids and materials, and sources of information related to the curriculum. (5F, W, S)

Pugmire

**105. Principles of Teaching in the Elementary School.** The purposeful activity of the child as the basic factor determining teaching procedure. Significance of individual differences in application to schoolroom practices. Consideration of classroom organization, equipment, and play activities. To be taken concurrently with student teaching. (3F, W, S)

Shaw, Pugmire

**106. Student Teaching in the Elementary School.** For juniors and seniors who have had a substantial amount of professional course work including Principles of Elementary Education, Educational Psychology, and Elementary School Curriculum. The apprentice plan is followed which requires an initial period of observation with minor responsibilities but with gradual increase of work and responsibility as the student's ability is demonstrated. Registration for all quarters should be arranged at fall quarter registration. Students who have credit for other courses in student teaching, or who have successful teaching experience, may register, by special permission of the instructor, for less than twelve credits. (12F, W, S)

Shaw, Pugmire, and Supervising Teachers

**106a. Student Teaching in the Elementary School.** For experienced teachers or individuals who have completed requirements for the secondary certificate and are preparing also for elementary. At least one-half day is required for one full quarter. The student will be assigned to a sponsor teacher in the campus laboratory school or in the public schools. Education 136 must be taken or audited concurrently. (5F, W, S)

Pugmire and Supervising Teachers

**107. Teaching of Reading.** Considers the objectives of the reading program, stages of reading development, skills and attitudes to be gained, the materials of instruction, and the experiences of children that contribute to the achievement of the objectives in reading. Opportunities for observation of reading situations in elementary school classrooms. (3F, S)

Shaw

**108. Social Studies in the Elementary School.** Organizing the elementary curriculum to provide social studies experiences consistent with the nature of the child and the democratic society in which he lives. (3W)

Shaw

**109. Science in the Elementary Grades.** Investigation of the aims of arithmetic and science programs. Acquaintance with the materials, techniques of instruction, and experiences that may help children gain the skills, understanding, and attitudes desirable in these subject areas. (3S) **Staff**

**110. Diagnosis and Treatment of Learning Difficulties.** A study of methods of dealing with learning difficulties in basic educational skills of pupils in the elementary and secondary schools. The emphasis is upon developmental and corrective measures in the typical classroom. Should be taken after student teaching. (3F, W, S) **Stone**

**111. Principles of Secondary Education.** The background and status of the American secondary school. Problems concerning desirable objectives and functions are analyzed. An introduction to various type curricula and methods. (5F, W, S) **Carlisle, Drake**

**113. Principles of Guidance.** Emphasis given to organization of guidance as a service, including individual and occupational differences, tests, measurements, and counseling. (3F, W, S) **Hatch**

**114. Organization and Administration.** Fundamental principles of operating public schools, with emphasis on Utah conditions. (3F, W, S) **Hansen, Lewis**

**118. Social Studies in the Secondary School.** A methods course for secondary school teachers with teaching majors or minors in any of the social sciences. (3F) **Budge**

**119. Extra-curricular Activities.** Designed to acquaint prospective teachers and administrators with extra-curricular programs in secondary schools, and the place such activities occupy. (2S) **Drake**

**124. The Teaching of English.** Considers what research says about methods of teaching English and what the content of the language arts program should be. Also a review of some fundamentals. (4W) **Budge**

**127. Secondary School Methods.** Considers teacher personality, planning instruction, study procedures, types of teaching, adapting classroom practices to individual differences, testing, and evaluation. Recommended to be taken the same quarter as Education 129. (3F, W, S) **Budge, Hatch**

**129. Student Teaching in the Secondary School.** Must be taken during the same quarter as Education 127 and should be taken concurrently with Education 130, thus making a block of twelve credits to be completed in one quarter. You should reserve all morning or

all afternoon in your daily schedule for these courses. Application for admission to student teaching is made the preceding quarter, and you may enroll only if your application has been approved. You must have completed Education 111 and Psychology 100 and 102. Members of the class are assigned to a sponsor teacher in nearby secondary schools for student teaching in their major and minor subjects. A brief period of observation is followed by gradually increasing responsibilities until, upon completion of the quarter, the student has had guided experiences in all professional responsibilities of the typical faculty member in the secondary school. (5F, W, S) **Hatch, McClellan, Budge**

**130. Student Teaching in the Secondary School.** See 129 above. (4F, W, S) **Hatch, McClellan, Budge**

**131. Student Teaching.** Student teaching at the junior college level. Enrollment by special permission only after you have completed Education 129. Designed for graduate assistants, laboratory instructors and others with substantial teaching assignments who wish to qualify for certification. (4W, S) **Staff**

**132. Curriculum for the Mentally Handicapped.** A study of curricula and adaptations in methods of teaching especially suited to the needs and abilities of mentally retarded children. Provides helpful guidance both for teachers of classes for these children and for teachers who provide for them in regular school classes. Psychology 123 is a pre-requisite or should be taken concurrently. (3W) **Sharp**

**133. Curriculum and Methods for Kindergarten.** Considers purposes and procedures in kindergarten education. Class members observe the kindergarten demonstration school on campus. (3F) **Pugmire**

**136. Improving Instruction in the Elementary School.** An analysis of the newer concepts of method and of the basic factors which contribute to effective learning. Motivation, problem solving, laboratory techniques, and materials of learning will receive attention. (3W, S) **Pugmire**

**138. Improvement of Teaching in the Secondary School.** Designed to meet the needs of teachers, supervisors, and administrators. Emphasizes recent developments in the improvement of teaching in classrooms and activities, from the junior high school to the junior college. Special attention to core curriculum. (3S) **Budge**

**141. Social Foundations of Education.** The social significance of current educational theories and practices. (3W) **Lewis**

## 118 USU — College of Education

**156. Student Teaching in Special Education.** Designed to help the teacher apply methods and techniques found to be successful with slow-learning children. The apprentice plan is followed which requires an initial period of observation with minor responsibilities which increase as the student's ability is demonstrated. Enrollment is limited to experienced teachers or students who have completed Education 106. Students must have completed or be concurrently taking the course in Psychology 123 and Education 132. (5F, W, S) **Sharp**

**159. Arithmetic in the Elementary School.** The place of arithmetic in the elementary school curriculum and methods of teaching it in the several grades. (3W, S) **Staff**

**161. Audio-Visual Aids in Education.** Studies the building of a program in which the newest materials and techniques are utilized. Preparation of audio-visual material. (3F, W, S) **Drake**

**182. History of Education.** Major educational movements from early Greek to the present, with emphasis on purposes, organization, instructional procedures, curriculum, etc., and their bearing on today's education. (3S) **Lewis**

**Other Methods Courses in Secondary Education:**

**Teaching of Art.** (See Visual Art 152)

**Teaching of Journalism.** (See Journalism 191)

**Teaching of Math.** (See Math. 150)

**Teaching of Music.** (See methods courses in music)

**Teaching of Physical Education.** (See methods courses in Physical Education.)

**Teaching of Shorthand.** (See Secretarial Science 180)

**Teaching of Typewriting and Bookkeeping.** (See Secretarial Science 179)

**202. Philosophy of Education.** An analysis of the major philosophies of education and their implications for current educational practices. (3F) **Lewis**

**203. Comparative Education.** A study of the school system and educational problems of Europe, Latin America, the Middle East, Far East, and Russia. Students from foreign lands and resident faculty members personally acquainted with various educational programs are utilized as resource persons. (3W) **Lewis**

**204. Elementary School Curriculum.** An advanced course in elementary school curriculum for graduate students, including experienced teachers, supervisors, and administrators. (3W) **G. Jacobsen**

**205. Reading and Conference.** Provides for individually directed study in subjects of your special interest and preparation. (1-2F, W, or S) **Staff**

**207. Elementary School Administration.** Operation and management of the elementary school. (3F) **G. Jacobsen**

**208. School Supervision.** Principles and practices of school supervision, including qualifications and responsibilities of supervisors of instruction. (3S) **Staff**

**211. Educational Measures.** Principles of measurements, tests and test construction, statistical analysis, and evaluation procedures in education. Pre-requisite: Psychology 112. (3W) **Stone**

**213. Organization and Administration of Guidance.** (See Psychology 213). (3S) **Wright**

**215. Secondary School Curriculum.** A study of the secondary school curriculum, junior and senior high school, as it now exists in typical schools, with special reference to Utah. (3F) **Carlisle**

**217. The Junior High School.** A study of the junior high school as a distinct segment of the American public school system, its functions, organization and curriculum with emphasis upon the core curriculum and common learnings. (3W) **Hatch**

**218. Public Relations in Education.** Objectives, techniques and media for an improved school public relations program. (3F) **Drake**

**221. School Administration.** The work of the school administrator and the principles upon which the profession of school administration is practiced. Federal, state, and local relations to education. (3F) **Hansen**

**223. Legal Aspects of School Administration.** Emphasizes responsibilities and functions of local and district school administrators. Interpretation of legal status, form and procedure, as established by statutes, legal opinions, and court decisions. (3W) **Lewis**

**236. Secondary School Administration.** Topics in secondary school administration, including problems of teacher-pupil personnel, the principal as supervisor, and managing the activity program. Designed for experienced school principals, and those preparing for the administrator's certificate in secondary education. (3W) **Hatch**

**237. Problems in Secondary Education.** For graduate students in secondary education and those preparing for school administration or supervision in junior or senior high school. Reviews current research in areas of interest to class members. (3W) **Carlisle**



**245. Problems in Elementary Education.** Considers those areas of elementary education in which members of the class desire to gain modern authoritative viewpoints. Opportunity for both individual and group work. (3W)

G. Jacobsen

**246. Problems in School Administration.** Has two purposes: (1) to assist students with the completion of graduate research problems in school administration; and (2) to serve as a seminar in school administration in which current problems in the field are analyzed. (3W)

Staff

**247, 248, 249. Education Seminar.** Opportunity for investigation and report of individual problems and for group discussion and criticism on these reports. Minimum of one quarter required of all Education majors. (1F, 1W, 1S)

Hansen

**267. Introduction to Research.** An inquiry into the nature and sources of research problems, with a study of underlying principles and methods of working out such problems in education. Some attention is given thesis writing. Prerequisite: Psychology 112. (3F)

Borg

**268. Methods of Educational Research.** Designed to assist the student in developing and perfecting his thesis research plan. Also provides practical research experience and insight through conducting a class research project. Prerequisite: Approval of instructor. For most students Education 267 is a prerequisite. (3W)

Borg

**271. Research and Thesis Writing.** Individual work in thesis writing with guidance and criticism. Credit arranged. (F, W or S)

Staff

**281. School Finance.** The importance of finances in a school system principles and practices involved in collecting and distributing school revenues, with special reference to conditions in Utah. (3F)

Lewis

**299. Internship in School Administration.** Provides introductory experiences in school administration. You work a minimum of five hours weekly under the direction of an administrator in the public schools, either elementary or secondary. (F, W, S) Credit to be arranged.

Staff

**302. Readings in Foundations of Education.** Considers problems of education in terms of their sociological, historical, and philosophical foundations. For advanced graduate students. Prerequisite: Approval of instructor. (3W)

Lewis

**315. Curriculum Development.** Advanced problems in curriculum building. Philosophic bases of the curriculum, current practices, and organization for curriculum study. (3S)

Carlisle

**322. Administration of School Personnel.** Principles and practices in management of teachers and students. (3S)

Hansen

**342. Higher Education.** A study of the development and current status of education beyond the high school in America, with emphasis upon the role of the junior college. (3S)

Himes

**355. School Building Programs.** School housing surveys, location and capacity of schools, instructional needs as a basis for planning, standards for equipment, checking plans and specifications, business and legal provisions governing financing and construction of new buildings, bids and contracts. (3S)

G. Jacobsen

**375. Field Studies and Thesis.** Individual work on research problems in the program Ed.D. Credit arranged. (F, W, S)

Staff

**382. School Business Management.** A study of the factors involved in the efficient management of school systems and individual schools. For school administrators, clerks, and students preparing for these positions. (3W)

Staff

*The awakening and integration of self is the principle aim of education.*

# Department of Fine Arts

(Music, Theatre Arts, Visual Arts)

PROFESSORS *H. R. Reynolds, W. Welti*; ASSOCIATE PROFESSORS *T. Tippetts*, HEAD, *A. L. Dittmer, A. J. Galos, J. Larson, F. T. Morgan, E. Thorpe, I. Wassermann*; ASSISTANT PROFESSORS *J. A. Byers, W. V. Call, M. F. Dalby, H. Groutage, G. Lindstrom*; INSTRUCTOR *G. Pahtz*.

Office in Main 333

The Department of Fine Arts is comprised of Theatre Arts, Music, and Visual Arts. It has a three-fold purpose: (1) It offers rewarding contact with the arts to the University and community at large, through experience as viewers, listeners or participants in a variety of exhibits, dramas and concerts. (2) It prepares students as teachers of the arts in the elementary and secondary schools, and as participants in other professional endeavors in the field of fine and applied arts. (3) It offers graduate studies, designed to deepen artistic insight and to qualify students for the Master of Science degree and advanced professional positions.

## Music

The Department of Fine Arts' program in Music serves three functions: (1) Provides courses for the general studentbody which meet lower division or general education requirements in Language Arts. (2) Provides courses beyond the above for students wishing to increase their understanding and appreciation of music or to develop their particular skills. (3) Provides specific sequences of courses leading to the Bachelor's and Master's degrees in music and music education.

Specific requirements and recommended course sequences for degrees in music may be obtained from the departmental office or from music advisers.

## Graduate Study

A Master of Science degree in Music may be earned, with a major in either Music Education or Applied Music.

To major in Music Education you must: (1) Have a teaching knowledge of all instruments and voice; (2) be able to play simple accompaniment on the piano. (3) participate in large and small ensemble performances at USU on your chosen instrument, or vocally; (4) satisfy your graduate committee as to competence in vocal or instrumental specialization. (Additional private instruction may be required by this committee.)

In addition to these general requirements, you must take the graduate record examination, and a music counseling examination, which will cover music history, literature, theory, music education and one instrumental or vocal specialty. From the results of these examinations your graduate committee will be able to suggest the most profitable course work and private instruction necessary to complete the Master of Science degree in Music Education.

The following courses are required of all Music Education candidates: Music Education Seminar, 3 hours; Music Theory Seminar, 3 hours; Music Literature Seminar, 3 hours; Aesthetics, 3 hours. Students may elect an additional three hours from: Music

201, Musicology; Music 108, Counterpoint; Music 107, Scoring and Arranging; Ensemble performance, private instruction or Summer Music Camp participation in Music Methods.

You can elect a thesis project, or a lecture recital. All work is to be completed under supervision of the graduate committee.

*Requirements for majoring in Applied Music* are approximately the same as those for Music Education, with these significant exceptions: (1) You need not have a teaching knowledge of all instruments and voice in order to specialize vocally or instrumentally; (2) your counseling examination does not include the area of Music Education; (3) the Music Education Seminar is recommended, but not required; (4) you may elect a thesis project, a lecture recital or a music recital.

The following course work is a minimum requirement: Music Literature Seminar, 3 hours; Music Theory Seminary, 3 hours; private instruction, 6 hours; ensemble performance, 3 hours. Six hours of credit will be required for the thesis, lecture recital or music recital. You are encouraged to take other elected courses which will be most helpful in individual situations.

## Music Courses

### History, Appreciation, and Literature

**1. Enjoying Music.** Designed to increase understanding and enjoyment and music through studying and hearing selected compositions in all musical forms. Helps meet Language Arts requirements. (3F, 3W, 3S) **Staff**

**101, 102, 103. Music History and Literature.** Basic course for music majors and those desiring a comprehensive background in music. Stresses music in general culture; the place of music in history, and the relationship of music to the other arts. Fall quarter covers the period from antiquity to the Baroque; winter quarter covers to Romanticism; and

spring quarter to contemporary music. Required of all music majors and minors. Music 1, recommended prerequisite. (3F, 3W, 3S)

**Wassermann**

**180, 181, 182. Piano Literature.** Fall quarter, music written for the piano from its earliest composers to Mozart; winter quarter, piano music from Beethoven to early Romanticists; spring quarter, the Romantic Period to the present. During all quarters, representative piano literature will be performed and analyzed. (2F, 2W, 2S) **Wassermann**

**183. Enjoying Opera.** The beginning and development of opera are studied by listening to recordings of the great classic works. Taught alternate years. (3S) **Welti**

**184. Sacred Music.** Evolution of cantata and oratorio and consideration of modern hymns and sacred music. Taught alternate years. (3W) **Staff**

**185. Symphonic Literature.** The evolution of symphonic music is studied and analyzed from recorded examples from masters of the Baroque, Classic, Romantic, and Contemporary Periods. Taught alternate years. (3F) **Galos**

**186. Chamber Music.** An analysis of chamber music forms and their development, including sonata literature. Taught alternate years. (3W) **Galos**

**201. Introduction to Musicology.** Designed to lay the foundation for a broad philosophy of music through a study of music acoustics, aesthetics, sources of music literature, and principles of music pedagogy. Open to upper division students only. Taught in alternate years. (3F) **Staff**

### Theory and Composition

**2. Music Fundamentals.** A study of the rudimentary materials of music: scales, intervals, keys, rhythms, meters, terminology for both visual and audio perception. Designed for non-music majors and elementary school teachers. (3F, 3S) **Welti**

**4, 5, 6. Beginning Theory.** Fundamental elements of music. Includes sight singing, ear training, rhythmic reading, melodic and harmonic writing and keyboard harmony. Required of music majors. (4F, 4W, 4S) **Dittmer**

**104, 105, 106. Advanced Theory.** Continuation of Beginning Theory. Includes advanced sight singing, keyboard modulation and introductory counterpoint. (3F, 3W, 3S) **Dittmer**

**107. Scoring and Arranging.** Study of each of the standard instruments in use today, their employment in small ensembles and large groups. Scoring and arranging for band, orchestra, and voices. (3W) **Dalby**

**108. Counterpoint.** Writing music in 16th century contrapuntal style. (3W) **Dalby**

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**109. Form and Analysis.** A study of musical form in both homophonic and contrapuntal styles, through analysis of examples taken from music literature. Taught alternate years. (3F) **Staff**

**111. Composition.** Projects in creative composition for more advanced students. Taught alternate years. Prerequisite: Music 106, 107, and 109. (3S) **Staff**

### Ensemble Performance

(Classes in Ensemble Performance can be repeated under the same number.)

**25, 125. Orchestra.** Provides training and practical experience in a wide range of orchestral works, including symphonies and major choral works. Credit arranged. (F, W, S) **Galos**

**26, 126. String Orchestra.** Provides experience in large ensemble playing. (1F, 1W, 1S)

**27. ROTC Cadet Band.** Open to freshman and sophomore men enrolled in ROTC Basic Training. Band drill and rehearsals. Fall quarter, ROTC Cadet Band meets with the University Band (see Music 28). All ROTC Band students are excused from regular military drill. (Students cannot receive credit in both University and Cadet Band during any one quarter.) (2F, 2S) **Dalby**

**28, 128. University Band.** Open to all students who play wind and percussion instruments. Rehearsals and drills for presentation of shows for football games. Study and preparation of symphonic band literature for concert performance. Attendance required at all public appearances. (2F, 2W, 2S) **Dalby**

**33, 133. Choir.** Open to all students desiring to sing good choral literature. Regular attendance is a condition of membership; a public performance closes each quarter's work.) (1F, 1W, 1S) **Dittmer**

**36, 136. Opera Chorus.** The Chorus is trained to perform in the annual University Opera. Auditions are conducted intermittently to determine progress in memorization. (2W) **Welti**

**135. Opera Staging and Production.** For those who have a role in the opera or work on the production staff. Credit of 1 to 4 hours is arranged in accordance with the project undertaken. (W, 1 to 4) **Welti**

**137. Madrigal Singers.** Study and performance of madrigals, motets, and distinctive choral literature. Membership by audition. Auditions are conducted at first and second rehearsals or by appointment with the director. (1F, 1W, 1S) **Dittmer**

**138. Meistersingers.** A selected group of men singers. Admission by audition. Auditions

are conducted at first and second rehearsals or by appointments with the director. (1F, 1W, 1S) **Welti**

**139. Chansonettes.** A selected group of women singers. Admission by audition. Auditions are conducted at first and second rehearsals or by appointment with the director. (1F, 1W, 1S) **Welti**

**42. Piano Ensemble.** Original works for two pianos and for piano, four-hands, training in sight reading, developing ability in ensemble playing. Audition required. Four students per section. (1F, 1W, 1S) **Wassermann**

**43. String Ensemble.** Offers opportunities for capable string players and pianists to form trios, quartets, and other small units. (1F, 1W, 1S) **Pahtz**

**44. Brass Ensemble.** Brass quartets, sextets, and larger groups. Members are selected from applicants. (1F, 1W, 1S) **Dalby**

**45. Woodwind Ensemble.** A study of the literature for Woodwind Quintet and other small groups. (1F, 1W, 1S) **Dalby**

**46. Vocal Ensemble.** Offers opportunities for capable singers to sing in trios, quartets, etc. Audition required. (1F, 1W, 1S) **Welti**

### Music Education

**140. Choral Conducting.** Basic routines of organizing and training choruses assigned projects in conducting small and large vocal ensembles. (3F) **Welti**

**141. Instrumental Conducting.** Basic routines in dealing with instruments in ensembles, band, and orchestra. (3W) **Dalby**

**150. Music for Elementary Schools.** Application of music to the elementary school classroom. Problems, methods, and materials in singing, rhythms, creative music, reading and listening. (3W, 3S) **Dittmer**

**151, 152, 153. Secondary School Methods and Materials.** Teaching and administration of various phases of the music program. 151.

Choral Methods (3F); 152. Orchestral Methods (3W); 153. Band Methods (3S) **Staff**

### Applied Music, Individual and Class Instruction

(One, 30-minute private lesson per week, with required practice, receives 1 credit.)

You may register for individual instruction with any member of the music staff, with permission of the instructor involved.

Class instruction is given for beginners, instrumental or vocal. Designed for music education majors who must be qualified to teach all instruments and voice in addition to their major instrument.

80. Group Piano Instruction	Staff
81. Group Vocal Instruction (1S)	Wolti
82. Group Woodwind Instruction (1W)	Dalby
83. Group Brass Instruction (1S)	Dalby
85. Group Percussion Instruction (1F)	Staff
60, 160. Individual Piano Instruction	Staff
62, 162. Individual Organ Instruction	Clark
64, 164. Individual Vocal Instruction	
	Dittmer, Wolti
70, 170. Individual Woodwind Instruction	
	Dalby
72, 172. Individual Brass Instruction	Dalby
74, 174. Individual Violin Instruction	Galos
75, 175. Individual Cello Instruction	Pahtz

University practice studios are available for student rental. Time schedules are to be arranged through the Department of Fine Arts. Rental fees are paid at the Controller's office.

## Theatre Arts

The undergraduate curriculum and activities in Theatre Arts are designed for students who desire to prepare themselves for teaching careers in Theatre Arts, for students who wish to specialize in Theatre, and for those who wish to prepare themselves for advanced study.

Forty-five to fifty credit hours of work in Theatre, Speech and dramatic literature are required for the teaching or non-teaching major in Theatre. A detailed list of requirements may be obtained from the department office.

Special curricula may be arranged for students who wish to take a composite major combining courses in Theatre with work in another department or division as Speech, English, Art, Music, Physical Education, etc. Sixty credit hours are required for the composite major. Ordinarily a composite major can be completed in four college years. Students who desire to complete a composite ma-

ior in Theatre and another division or department should work out their programs with advisers assigned to them by the heads of the departments concerned.

For the minor in Theatre a minimum of eighteen credit hours is required including three hours in FA TH 1. Other courses to meet the needs of the student are to be selected with the aid of an adviser.

An important activity of the Theatre division is the Utah State Theatre which produces a number of plays each year. Students majoring or minoring in Drama are required to participate in the various departments of these productions: acting, staging, lighting and managing.

## Graduate Study

Theatre Arts offers advanced course work, projects and seminars leading to the attainment of the Master of Science degree with a major in Drama. As much as possible the study program will be arranged to best serve the professional needs and goals of each student. To this end, a graduate student, during the first quarter of residence, and before admission to candidacy for the Master of Science degree, must take two diagnostic or program planning examinations. The first of these is a comprehensive written examination covering the basic areas of Drama and Theatre. The second is an oral skills test in which a student demonstrates before a departmental committee his competency in voice and diction, extemporaneous speaking and interpretative reading or acting. The results of these diagnostic inquiries are used to assist the student and his faculty adviser in planning a complete program of study and in selecting the thesis subject or project.



The candidate for the Master of Science degree in Theatre may, with the approval of his supervisory committee, elect to write a thesis, or he may present a creative project in playwriting, directing, acting, designing or technical practice. As part of the creative project and in lieu of a thesis, a candidate must submit a manuscript, production book or project record.

## Theatre Arts Courses

### History and Appreciation Courses

**1. Understanding Theatre.** A course designed to develop appreciation for theatrical entertainment through learning the contributions of playwright, actors, directors, designers, technicians, and theatres. Readings, recordings, pictures, and actual performances are utilized. (3F, 3S) **Byers**

**2. Current Drama.** Plays and musical comedies currently being presented in world theatrical centers are studied and new innovations in theatrical productions are considered. (3W) **Call**

**10. Drama Appreciation.** A study of dramatic forms: In tragedy, comedy, melodrama, and theatrical styles such as realism, romanticism, symbolism and expressionism. (3W) **Morgan**

**100, 102, 104. Masterpieces of Theatre.** A study of plays as presented in the theatre. Greek, Roman, and Medieval religious plays in the fall quarter. Winter quarter, plays from the renaissance to Ibsen are considered. Modern European and American dramas are studied in the spring quarter. (3F, 3W, 3S) **Byers**

**106. Motion Picture and Television Appreciation.** An analysis of cinema and Television attendance at "Film Festival" and selected movies required. Brilliant telecasts are assigned and discussed. (2F, 2W evening) **Tippetts**

**130. History of the Theatre.** An historical survey of the evolutionary processes in the theatre from ancient to modern times. Actors and acting methods, stages and production effects, etc., are considered. (3F) **Call**

**160. Playwriting.** Analysis of dramatic structure and technique as encountered in play directing, dramatic literature or in the writing of original plays. (3W) **Morgan**

### Performance

**20. Voice for Theatre.** Vocal development of students in preparation for actual dramatic performance. Practice in theatre reading for

the improvement of vocal power, projection, diction, flexibility and variety. Individual and group practice in the interpretation of lines and scenes. (3F) **Staff**

**44. Fundamentals of Acting.** Theory and practice of the basic concepts of the art of acting. (3F) **Call**

**46. Intermediate Acting.** A continuation of FA Drama 44 with emphasis on characterization and the development of the actor's physical, mental and emotional resources. (3W) **Call**

**144. Advanced Acting.** Emphasis on the creative approach to acting, analysis and creation of the role and ensemble playing. (3S) **Call**

**124. Theatre Workshop.** Limited credit is given for participation in Utah State Theatre plays. Rehearsal and production staff work arranged. Consult instructor for permission to register. (1-6F, 1-6W, 1-6S) **Staff**

**146. Directing.** Theory and practice of the principles of stage directing. Students select, cast, direct and present one-act plays. (3S) **Call**

**132, 134, 136. Private Instruction.** Individual tutoring to develop competence in acting, directing, scenic and costume design. Special fee. May be taken from one to three quarters. (F, W, S, credit and time arranged.) **Staff**

### Production and Staging

**50. Stagecraft.** Technical organization and planning of the production, building, rigging, and shifting of scenery and construction of properties. (2W, 2S) **Morgan**

**52. Makeup.** Practice and theory of straight and character makeup for the stage. One two-hour laboratory period per week. Recommended for prospective directors of school, church, and community theatricals. (1F) **Morgan**

**54. Children's Theatre.** Creative dramatics and the selection, preparation and presentation of children's plays. Recommended for prospective elementary school teachers. Consult instructor before registering. (S. 3 or 5) **Call**

**56. Puppetry.** The design, construction, and manipulation of puppets. Recommended particularly for elementary teachers. (3W) **Reynolds**

**105. History of Costume.** Shown social, economic, political influence on dress and fabric. Modern fashion is interpreted in terms of historic and national costumes and world events. (College of Home and Family Living) (3F) **Staff**

**150. Scene Design.** Application of basic principles of design to the stage setting. Development of the scenic design through color sketches, plans, elevations and models. History of stage decoration and some painting techniques. (3F) **Morgan**

**152. Stage Costuming.** Fundamentals of pattern drafting, construction of stage costumes and accessories, organization and care of costume wardrobes. (2S) **Staff**

**153. Costume Design.** Theory and practice in the design and selection of costumes for non-realistic, historical, and modern plays. Relationship of costume to character and production. Prerequisite: FA Drama 152, or consent of instructor. (2S) **Byers**

**154. Stage Lighting.** Study and application of the principles of stage lighting. Practice in planning the lighting and in mounting and operating lighting equipment. (2W) **Staff**

**156. Theatre Organization and Management.** Study of the managerial aspects (organization, promotion, financing) of the education and community theatre. (2W) **Call**

**190. Problems in Drama.** Selected research problems of merit and of mutual interest to students and instructors are investigated. Consult instructor for permission to register. (F, W, S) (time and credit arranged) **Staff**

**192. Projects in Theatre.** Advanced work in acting, directing, scene design, costume design, costume construction, lighting, technical practice, makeup and theatre management. Projects may be done in connection with Utah State Theatre productions or they may be independent endeavors. A total of 9 credits may be earned in this course. By permission of instructors. (F, W, S) (time and credit arranged) **Staff**

**194. Problems of Drama Directors.** Play selection, organization of the production, drama club activities, simplification of settings, lighting, costumes, financing, auditorium and stage facilities, central staging, audio-visual aids, and bibliography are studied. Recommended for directors and prospective directors of high school, church, and community theatres. (3 to 5 credits, S evening)

## Visual Arts

To the studentbody in general Visual Arts offers: (1) Courses which meet requirements in the field of language arts; (2) Elective courses designed to increase appreciation of art and to satisfy avocational interests in the field.

Visual Arts offers curricula leading to the Bachelor of Science degree in Art Education and in Applied Art. Majors in Art Education may specialize in elementary art or secondary art, and in any of the following areas of concentration: Drawing and Painting, or Applied Design which allows specialization in Ceramics, Art Metal, Textile Design, Advertising Design and Illustration, Sculpture, Print Making and Graphic Art, and Interior Design. Majors in Applied Art may specialize in Advertising Design and Illustration, Crafts, Drawing and Painting, or Interior Design. Majors in Art Education must choose a minor in a department other than Art. This is also recommended for majors in Applied Art.

The Fine Arts Department reserves the right to retain student work in Visual Arts for temporary or permanent exhibition.

A list of detailed requirements and course sequences in the various curricula may be obtained from the department office.

## Graduate Study

Visual Arts offer opportunity for research and graduate study leading to the Master of Science degree in the following fields: (1) Drawing and Painting; (2) Applied Design, which comprises Ceramics, Art Metal, Textile Design, Illustration and Advertising Design, Print Making and Graphic Art, Interior Design and Art Education.

A minimum of 30 hours must be taken in residence. Six years is the time limit for completion of the degree. This degree may be acquired through summer study providing it is completed in the stipulated period. A maximum of 9 credits of graduate work com-

pleted at another approved Graduate School may be allowed toward the Master of Science degree.

A study program is set up for the candidate through the head of the department. Then a graduate committee is established, with the candidate having choice of committee members.

At least 45 hours of credit must be taken in courses numbered 100 or above which are approved for graduate credit. Ten credits should be in the 200 category, exclusive of thesis, which requires 9 to 15 credit hours. At least a portion of the thesis must be set up in the nature of a project. The project must be decided upon during the first quarter. A photographic record must be kept of the progress on the thesis project. At the time of graduation the candidate is required to prepare a comprehensive exhibit of his work produced under the Visual Arts instructors.

Two courses required of all M. S. candidates are Art Criticism (No. 165) followed by Graduate Seminar (No. 265).

## Visual Arts Courses

### Art Appreciation and History

**1. Exploring Art.** Designed to increase enjoyment of living through the sense of sight. Develops understanding of basic principles underlying the visual forms of art in everyday life. (3F, 3W, 3S) **Staff**

**2, 3, 4. Art History.** A three-quarter sequence for Visual Arts majors. A thorough survey of the lasting contributions of each major art movement. Artists and their enduring works are discussed and observed through use of visual aids: Primitive, classical, medieval, renaissance, neoclassical, the important schools of modern art, and contemporary works. (3F, 3W, 3S) **Reynolds**

**11. Introductory Art Workshop.** For students wishing a broad sampling of many of the offerings in Visual Arts. Painting, drawing, block printing, ceramics, jewelry, photography, etc., are introduced through student participation. Several instructors. (3F, 3W, 3S) **Staff**

**101. Art History of the Western Hemisphere.** Stresses the great contributions of the Indian cultures of Latin American and the Spanish Colonists in painting, sculpture, and architecture. (3S) **Staff**

### Basic Design

**5. Beginning Design.** Introduces the basic art elements and is comprised of projects largely in two dimensions. Required of all Visual Arts majors. (3F, 3W, 3S) **Staff**

**6. Advanced Design.** A continuation of Art 5. Three-dimensional projects are introduced. The important element of color is stressed. Prerequisites: Visual Arts 5. (3W) **Staff**

**7. Design Projects.** A great variety of design possibilities are explored in a wide variety of media. Emphasis is on three-dimensional design. Prerequisites: Visual Arts 5 and 6. (3S) **Lindstrom**

**135. Color.** Color as a design element in stage lighting, painting and every-day living. Physical, psychological and artistic aspects are correlated. (3S) **Reynolds**

### Painting

**14. Introduction to Painting.** Basic approaches to painting which develop freedom of expression. Tempera and related media. Recommended as a prerequisite to all other painting courses. (3F, 3W) **Larson**

**109. Landscape.** Various approaches and techniques in landscape painting in oil and related media. Fieldtrips. (3F, 3S) **Larson**

**111. Water Color.** Various approaches to still-life and landscape water color painting. (3F, 3S) **Lindstrom**

**112. Portrait Painting.** Problems of portrait painting. Any media may be employed. Prerequisite: Visual Arts 8 or 104. (3S) **Groutage**

**127. Painting Workshop.** Work may be done in representational or non-representational areas in oil or related media. (3W, 3S) **Thorpe**

### Graphic Art

**8. Basic Drawing.** An individually creative approach to drawing natural forms from observation and memory. Various media are used. Prerequisite to all painting courses. (3F, 3W) **Larson, Lindstrom**

**9. Anatomy for Artists.** Analysis of bone and muscular structure of the body with emphasis on surface characteristics. Prerequisite to life drawing. (3W) **Groutage**

**27. Art Photography.** Photography is now recognized as a basic art medium and this first course emphasizes ways and means of producing fine photographs. (3F) **Reynolds**

**28. Art Photography.** Emphasis placed on texture, composition, lighting and print quality. (3W) **Reynolds**

**29. Art Photography.** Introduction to color, color films, developing color film, color harmonies, multiple exposures and other techniques necessary to produce fine color work. (3S) **Reynolds**

**104. Life Drawing.** Anatomical rendering, and analysis of the drawing in relation to creative composition. (3S) **Groutage**

**105. Advanced Drawing and Composition** Emphasis is given to drawing several objects in strong compositional designs. (3S) **Thorpe**

**106. Perspective and Rendering.** Principles of perspective and styles of rendering. For Landscape Architecture and Visual Arts students. (3W) **Reynolds**

**125. Print Making.** A study of such methods as block printing, wood cuts, silk screen, and etching. Desirable preparation: Visual Arts 8. (3W) **Groutage**

## Functional Design

**21. Lettering Layout.** Elementary and advanced pen and brush lettering. (3F, 3W, 3S) **Thorpe**

**40. Essentials in Interior Design.** Study of historic styles; analysis of art elements; principles of design applied to home planning and furnishing. (3F, 3W) **Larson**

**115. Fabric Design.** Projects in creating design of character and beauty, and applying them to suitable textiles in techniques of block print, stencil, and hooked rug, creative embroidery, silk screen printing, freehand painting, and batik. Prerequisites: Visual Arts 5 and 6. (3S) **Larson**

**116. Ceramic Glaze and Decoration.** Emphasis on design, decoration, glazing, and firing. (3F, 3W, 3S) **Groutage, Lindstrom**

**117. Art Metal and Jewelry-Lab.** Art Metal projects in hand-wrought copper, and silver, jewelry design and construction, precision casting. (3F, 3W, 3S) **Staff**

**118. Leathercraft.** Design and construction of wallets, belts, bags, briefcases, holsters, bridles, and related projects. Executed in techniques of modeling, carving, stamping, embossing, etc. (3F, 3W, 3S) **Staff**

**121. Advertising Design and Illustration.** Elementary and advanced fashion illustration, art for reproduction, advertising layouts, techniques and skill in any media that will prepare the student for a professional career in advertising. (3W) **Thorpe, Groutage**

**140. Applied Interior Design.** Practical application of art elements and principles of design to problems of home decoration and furnishings. (3W, 3S) Prerequisite: 40. **Larson**

**141. Advanced Problems in Interior Design.** Experimental projects in home planning and furnishing. (3S) Prerequisites: 40 and 140. **Larson**

**160. Sculpture.** Creative expression in a variety of plastic media. Emphasizes aesthetic employment of form and the technique necessary to casting, built-up plaster modeling, beating metals, stone cutting, and wood carving. (3S) **Groutage**

## Art Education

**50. Art for Young Children.** Designed to meet needs of child development majors, mothers in the home, kindergarten and first grade teachers. (3S) **Larson**

**151. Art Methods for Elementary Grades.** Methods of teaching drawing, painting, design and handwork in the elementary schools. Required preparation for a grade school teacher. Prerequisites: Visual Arts 5 and 6 or 14. **Reynolds**

**152. Art Methods for High School.** Methods of Teaching art in high school. How to motivate work in drawing, painting, design, and crafts. Required of all majors and minors in art on secondary teaching level. (3S) **Reynolds**

*Internal drives that make men act are just as much a form of power as electricity and, like electricity, must be given the proper outlets.*

# Department of Health, Physical Education and Recreation

PROFESSOR *H. B. Hunsaker*, HEAD; ASSOCIATE PROFESSORS *L. Downs*, *D. O. Nelson*; ASSISTANT PROFESSORS *P. Fuller*, *L. McClellan*; INSTRUCTORS *C. R. Jensen*, *A. Mendini*, *J. Pearce*, *H. D. Rasmussen*.

Office in Smart Gym 26

## Intercollegiate Athletics Staff

DIRECTOR *H. B. Hunsaker*; HEAD BASKETBALL COACH *C. Baker*; HEAD FOOTBALL COACH *E. Faunce*; ASSISTANT FOOTBALL COACHES *R. Maughan*, *J. Nelson*; WRESTLING COACH *G. Nelson*; FRESHMAN COACH *E. Sorenson*; ADMINISTRATIVE ASSISTANT *D. Gardner*.

### Office in Fieldhouse

In the activity courses opportunity is given to you to develop skills in some physical activity that will help establish a permanent interest in healthful recreation, promote physical fitness, build morale, and maintain health.

Women students are required to take physical education activity courses for six quarters. Classes are selected by the student; no course can be repeated for credit.

All male students should take some activity courses in Physical Education. Either P. E., Military Science or Air Science is required. Numerous courses in aquatics, dual, team, individual and outing activities are offered each quarter.

All students should take physical education, military science or air science each quarter of their freshman year.

### Intramural Activities

Intramural activities are conducted as part of the program of the Department of Health, Physical Education and Recreation. The intramural program is planned to

give you moral, social, physical, and educational values derived from competitive activities. This program provides for both individual and team endeavor, and the department attempts to make it possible for all students to participate.

The Women's Intramural Association offers a varied program of activities. All women students are eligible and encouraged to participate in any of the activities offered.

The department offers an extensive intramural sports program for men. Competition in a variety of activities is conducted in separate leagues: fraternity, department, club, and all-campus. All male students are encouraged to participate in one of these leagues.

### Recreation

The department attempts to meet your recreational needs and interests, regardless of your major. Purpose of these activities is to develop a love of wholesome recreation and sufficient skills so that you will continue to participate with satisfaction and enjoyment in vari-



ous recreational activities after college. Clubs are organized in a variety of activities so that this purpose can be realized. These clubs including hiking, water sports, winter sports, tap dancing, fencing, archery, horse shoes, tennis, golf, badminton, boxing, swimming, tumbling and square dancing.

### Professional Preparation in Health, Physical Education and Recreation

You can specialize in any of the following areas: Physical Education, Elementary Physical Education, Secondary Physical Education, Recreation, Health, Dance, Professional Scouting, or Physical Therapy. A composite major including two of the above areas can be taken to meet the major-minor requirement. Selection of a program of study in these areas should be carefully worked out under the guidance of your adviser. The following courses, in addition to the six credits required for graduation, are suggested for each of the above areas:

Non-certifying Physical Education majors should complete Physical Education 17A, 18, 20, 21, 22, 30, 31, 75, 83, 84, 85 or 92, 106, 107, 108, 183; six credits in Sports Techniques, and ten credits of approved electives.

Elementary Physical Education majors should complete Physical Education 24, 55, 75, 81, 83, 84, 85 or 92, 106, 120, 177, 182, 183, 184; six credits in Sports Techniques and six credits from approved electives.

### Secondary Physical Education Requirements

Course	Men Freshman		
	Credit F W S		
P. E. 20, 21, 22 .....	1	1	1
P. E. 75 .....	2	...	...
P. E. 17A .....	Any Quarter		
*Group Req. ....	All Quarters		
Minor .....	Any Quarter		
Eng. 1, 2, 3 .....	3	3	3
Electives .....	All Quarters		

\*Recommended Group Requirement.

Ex. Sc. = Chem. 10 & Physics 3 or 6

Biol. Sc. = Zoology 1 & Physio 4.

Course	Sophomore		
	Credit F W S		
P. E. 30, 31, 32 .....	1	1	1
P. E. 74 .....	Any Quarter		
P. E. 83 .....	...	3	...
P. E. 84 .....	...	3	3
P. E. 85 .....	3	...	...
Ed. 50 .....	Any Quarter		
Minor .....	Any Quarter		
Group Req. ....	All Quarters		

Electives (include Physio. 20—

Human Anatomy) ..... 3 .....

Course	Junior		
	Credit F W S		
P. E. 120, 121, 122 .....	2	2	2
P. E. 106, 107, 108 .....	3	3	3
P. E. 188, 189, 190 .....	2	2	2
P. E. 132 .....	Any Quarter		
Ed. 111, 114 .....	Any Quarter		
Psy. 100 and 102 .....	Any Quarter		
P. H. 155 .....	Any Quarter		
Minor .....	Any Quarter		
Elective .....	All Quarters		

Course	Senior		
	Credit F W S		
P. E. 130, 131 .....	2	2	...
P. E. 183, 192, 184 .....	3	3	3
Ed. 127, 129, 130 .....	Any Quarter		
P. E. 132 .....	Any Quarter		
P. E. 191 .....	Any Quarter		
Minor .....	Any Quarter		
Electives .....	All Quarters		

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### Women Freshman

Course	F	W	S
P. E. 75 .....	2	---	---
P. E. 20, 21, 22 .....	1	1	1
P. E. 24, 26 .....	1	---	1
P. E. 98 .....	---	---	1
P. E. *17A, *18 .....	1	1	---
Basic Communications .....	3	3	3
Group Req. ....	5	10	5
Electives .....	3	2	6
	16	17	17

### Sophomore

Course	F	W	S
P. E. 81, 83 .....	3	3	---
P. E. 92, 84 .....	---	3	3
P. E. 77, 78, 79 .....	1	1	1
P. E. 94, 95, 96 .....	1	1	1
P. E. *74 .....	---	---	2
Ed. 50 .....	---	---	2
Group Req. ....	10	5	5
Electives .....	2	3	3
	17	16	17

### Junior

Course	F	W	S
P. E. 106, 107, 108 .....	3	3	3
P. E. *120, 121, 122, 165 .....	2	2	2
P. E. *132 .....	---	---	2
P. E. 150 .....	---	---	4
Ed. 111 .....	3	---	---
Psy. 100 and 102 .....	---	5	---
Ed. 114 .....	3	---	---
Minor .....	3	3	3
Elective .....	2	3	3
	16	16	17

### Senior

Course	F	W	S
P. E. 160, 161, 162 .....	---	2	2
P. E. 183, 192, 184 .....	3	3	3
P. H. 155 .....	3	---	---
Ed. 127 .....	---	3	---
Ed. 129 .....	---	4	---
Ed. 130 .....	---	4	---
Minor .....	6	---	3
Electives .....	5	---	8
	17	16	16

Recreation majors should complete Physical Education 3, 74, 83, 84, 85, 153, 157, 179, 183, 196; six credits in Sports Fundamentals; Political Science 15, Forestry 138 or 139 and a combined total of nine credit hours in Sociology, music, drama and crafts.

Health Education majors should complete Physical Education, 55, 84, 135, 109, and 145. Public Health 15, 50, 150, 156, Psychology 33, Child Development 67 and one or more of the following: Foods 5, Social Work 162, Psychology 154, and Zoology 111.

Dance majors should complete Physical Education 72, 76, 81, 83, 84, 102, 103, 104, 106, 107, 108, 111, 140, 150, 151, 153, 183, 184, and six credits of approved electives.

Students planning to enter a Physical Therapy school should complete Physical Education 17A, 18, 55, 74, 75, 83, 106, 107, 108, 183; four credits in Sports Fundamentals, four credits in Sports Techniques, and 12 hours of approved electives. Physical Therapy students should work closely with the adviser in selecting courses to fill groups and minor requirements.

### Graduate Study

*Master of Science Degree.* The department offers courses leading to the Master of Science degree in physical education or recreation. Before admission to candidacy for the degree, a student must complete the equivalent of a Bachelor's Degree in physical education at USU and additional requirements as prescribed by the School of Graduate Studies. Required courses are: P. E. 192, 250, 271, 295, 299. Ed. 267, Eng. 211.

Students entering the department for graduate study should select supporting fields from one or two other areas of the University, closely allied to Physical Education and Recreation.

Students should elect graduate courses from such areas as Education, Public Health, Sociology, Psychology, and Biological Science.

\*Courses taught more than one quarter each year.

## HPER Courses

### Activity Courses for Men

2. Freshman Football (1F) Sorenson
4. Boxing (1F, 1W, 1S) G. Nelson
5. Boxing (Advanced) (1F, 1W, 1S) G. Nelson
6. Football (1W) (Non-Varsity) Faunce
7. Wrestling (1F, 1W, 1S) G. Nelson
8. Wrestling (Advanced) (1F, 1W, 1S) G. Nelson
10. Indoor Track and Field (1W) Maughan
12. Track (1S) Maughan
15. Softball (1S) Staff
16. Swimming (1F, 1W, 1S) Staff
17. Swimming (Intermediate) (1F, 1W, 1S) Staff
23. Basketball (1F, 1W, 1S) Baker
27. Weight Training (1F, 1W, 1S) D. Nelson
29. Varsity Football (1F) Faunce
34. Soccer (1F) Staff
35. Volley Ball (1W) Staff
37. Trampoline (1F, 1S) McClellan
38. Tumbling and Gymnastics (1W) McClellan

### Activity Courses for Women

39. Soccer-Speed Ball (1F) Staff
40. Volleyball (1F, 1W) Staff
41. Basketball (1W) Staff
42. Softball (1S) Staff
43. Field Hockey (1S) Staff
44. Tumbling and Stunts (1W, 1S) Staff
52. Swimming (1F, 1W, 1S) Staff
56. Swimming (Intermediate) (1F, 1W or 1S) Staff
58. Rifle (1W) Staff
60. Body Conditioning (1F, 1W, 1S) Staff
152. Synchronized Swimming (1F) Staff

### Activity Courses for Men and Women

1. Hiking (1F, 1S) Staff
3. Skiing (1W) D. Nelson
9. Fencing (1F, 1W, 1S) Downs
13. Bowling (1F, 1W, 1S) Staff
18. Swimming (Advanced) (1F, 1W, 1S) Staff
19. Skiing (1W) 2nd Quarter Staff
- 45, 46, 47. Adapted Physical Education. Designed to meet the needs of individuals who are unable to participate in the required program of Physical Education. Students must obtain permission of the head of the department before registering. (1F, 1W, 1S) D. Nelson

48. Modern Dance (1F, 1W) Fuller
49. Modern Dance (Intermediate) (1W, 1S) Fuller
61. Archery (1F, 1W, 1S) Staff
66. Badminton (1F, 1W, 1S) Staff
67. Tennis (1F, 1S) Staff
68. Folk Dance (1F, 1W) Fuller
70. Tap Dancing (1F, 1W, 1S) Fuller
71. Tap Dancing (Interm.) (1F, 1W) Fuller
72. Social Dancing (1F, 1W, 1S) Staff
73. Golf (1F, 1S) Staff
74. Life Saving. Prerequisites: Red Cross Swimmers Card or permission of instructor. American Red Cross Certification is given to students who pass the examination. (2F, 2W) Rasmussen
76. Social Dance (Advanced) (1F, 1S) Staff
90. Tennis (Intermediate) (1S) Staff
136. Golf (Advanced) (1S) Staff
141. Modern Dance (Advanced) (1W, 1S) Fuller
155. Diving. Prerequisite: PE MW 18 (1S) Staff
161. Archery (Advanced) (1W, 1S) Staff
166. Badminton (Advanced) (1F, 1W, 1S) Downs

### Professional Courses

167. Tennis (Advanced) (1S) Staff
168. Square Dancing (1F, 1W, 1S) Jensen
- 17A. Swimming. For freshmen and transfer students majoring in Physical Education. (1F, 1W) Rasmussen
20. Fundamentals of Sports. Designed to develop the fundamental skills of tennis and archery. (1F) Taught alternate years. Staff
21. Fundamentals of Sports. Designed to develop the fundamental skills of social and square dancing. (1W) Taught alternate years. Staff
22. Fundamentals of Sports. Designed to develop the fundamental skills of badminton and golf. (1S) Taught alternate years. Staff
24. Dance Laboratory. Folk dancing for freshman and sophomore women majoring or minoring in Physical Education. (1F) Taught alternate years. Fuller
26. Dance Laboratory. Tap dancing for freshman and sophomore women majoring or minoring in Physical Education. (1S) Taught alternate years. Fuller
30. Fundamentals of Sports. Designed to develop the fundamental skills of boxing and wrestling. (1F) Taught alternate years. Not taught 1958-59. Staff

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**31. Fundamentals of Sports.** Designed to develop fundamental skills of tumbling, gymnastics and trampoline. (1W) Taught alternate years. Not taught 1958-59. **Staff**

**32. Fundamentals of Sports.** Designed to develop the fundamental skills of volleyball and speedball. (1S) Taught alternate years. Not taught 1958-59. **Staff**

**55. First Aid.** Standard and Advanced American National Red Cross courses in first aid, with emphasis on practical use of the knowledge in various occupations. Detailed demonstrations and practice. American Red Cross First Aid certificate may be obtained by students who pass a satisfactory exam. (3F, 3W) **Jensen**

**75. Introduction to Physical Education.** An introduction to the history, philosophy, theory and practice of Physical Education. (2F) **Staff**

**77. Dance Laboratory.** Techniques of Elementary modern dance for freshman and sophomore women majoring or minoring in Physical Education. (1F) Taught alternate years. Not taught 1958-59. **Fuller**

**78. Dance Laboratory.** Techniques of intermediate modern dance for freshman and sophomore women majoring or minoring in Physical Education. (1W) Taught alternate years. Not taught 1958-59. **Fuller**

**79. Dance Laboratory.** Techniques of advanced modern dance for freshman and sophomore women majoring or minoring in Physical Education. (1S) Taught alternate years. Not taught 1958-59. **Fuller**

**81. Rhythms and Dramatic Games.** Rhythms for young children; its use in creative movement. Methods of presenting and developing rhythms are studied. (2F) **Fuller**

**83. Playground and Community Recreation Leadership.** Lectures and practical work. Lectures on selection of suitable material and methods of handling various groups. (3S) **Jensen**

**84. Problems in Physical Growth.** The individual is traced through the various stages of development, with emphasis on the physical aspects of growth. Principles and functions of activity are applied. (3S) **D. Nelson**

**85. Organization of Intramural Sports.** Organization and administration of intramural sports in secondary schools. Sports, tournaments, units of competition, scoring systems, and coordination of intramural sports with Physical Education and Athletics. (3F) **Mendini**

**86. Sports Officiating for Men.** Knowledge of the rules and mechanics of officiating football, touch football, basketball, wrestling and boxing. Attention is also given to the proper instruction of other game officials such as timers, scorers and game administrators. (2F) **Mendini**

**87. Sports Officiating for Men.** Knowledge of the rules and mechanics of officiating volleyball, ski meets, water basketball, badminton and softball. The techniques of officiating basketball are reviewed. Attention is also given to the proper instruction of other game officials such as timers, scorers and game administrators. (2W) **Mendini**

**92. Organization of Intramural Programs for Women.** Organization of sports days, play days, tournaments, and administration of intramural activities for women. (3W) **Downs**

**93. Sports Officiating for Women.** Techniques of officiating, knowledge of rules, and practical experience in officiating. (2F) **Staff**

**94. Physical Education Laboratory.** For lower division women, designed to develop the fundamental skills of soccer-speedball and volleyball. (1F) Taught alternate years. Not taught 1958-59. **Downs**

**95. Physical Education Laboratory.** For lower division women, designed to develop the fundamental skills of basketball and basketball officiating. (1W) Taught alternate years. Not taught 1958-59. **Downs**

**96. Physical Education Laboratory.** A professional course for lower division women designed to develop the fundamental skills of softball and field hockey. Taught alternate years. Not taught 1958-59. (1S) **Downs**

**98. Physical Education Laboratory.** Fundamentals of individual sports for lower division women majoring or minoring in Physical Education. (1S) Taught alternate years. **Downs**

**102. Dance Composition.** Composition based upon the elements of direction, level, and dimension. Experience in individual and group composing. (2F) **Fuller**

**103. Dance Composition.** Composition based upon the following musical forms: AB, rondo, theme, and variation, canon and round, dance suite. (2S) **Fuller**

**104. Dance Production.** Composition done independently. Participation in a performance required. Lighting, staging, costume and make-up applied to a dance concert. (2W) **Fuller**

**106. Scientific Foundations of Physical Education.** Basically a study of kinesiology, the science of movement. Includes a study of the structure of the human body in terms of its use in activity; a mechanical analysis of all types of activity based upon principles of good body mechanics; methods of developing and using the human body. (3F) **D. Nelson**

**107. Scientific Foundations of Physical Education.** Basically a study of the physiological functions of the human body in various types of activity. The course includes a detailed study of the physiological changes that occur during all kinds of activity. Physiological principles are then applied to Physical Education. (3W) **D. Nelson**

**108. Scientific Foundations of Physical Education.** Basically a study of the adapted Physical Education program. Includes the administration of a Corrective Physical Education program. Also a study of abnormal problems in body mechanics, athletic injuries and their treatment, athletic training procedures, and principles dealing with abnormal conditions found in the physical education program. (3S) **D. Nelson**

**109. Problems of Body Conditioning.** Deals with problems of weight control, body mechanics, posture and general body conditioning. It is approached through lecture, special exercises and various recreational sports. (3F, W, S) **D. Nelson**

**111. Creative Rhythms for Schools.** Methods and materials used in guiding creative rhythmic experiences of students. Material applicable to elementary or secondary school. (3W) **Fuller**

**113. Construction of Physical Education Equipment.** Construction of and practice in the use of rhythmic instruments and play equipment. (3S) **Staff**

**120. Methods in Physical Education.** Student assists in the service program under a staff member. He begins his first practical training in teacher preparation. Classwork consists of methods and techniques of teaching physical education and relates directly to the assistant teaching program. (2F, 2W, 2S) **L. Downs, D. Nelson**

**121. Techniques in Physical Education.** Designed to develop teaching techniques in Social and Square Dance. Open to men and women. (2W) Taught in alternate years. **Staff**

**122. Techniques in Physical Education.** Designed to develop teaching techniques in tennis and badminton. Open to men and women. (2S) Taught alternate years. **Staff**

**124. Scoutmaster's Basic Training Experience.** The standard training course approved by the National BSA Council and includes the following: Plans and methods in organization and leadership, program planning, meetings, hiking, and camping. (2S) **Staff**

**130. Technique in Physical Education.** Designed to develop teaching techniques in boxing and wrestling. (2W) Taught alternate years. Not taught 1958-59. **Staff**

**131. Technique in Physical Education.** Designed to develop teaching techniques in gymnastics, tumbling, trampoline and speedball. (2S) Taught alternate years. Not taught 1958-59. **Staff**

**132. Water Safety Instructor's Course.** Prerequisites: American Red Cross Senior Life Saving certificate and permission of the instructor. Attention is given methods of teaching swimming, diving, life-saving and use of small water crafts. American Red Cross certification is given students who pass the exam. (2W, 2S) **Rasmussen**

**135. Safety Education.** (a) The needs for safety education; (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 in many areas. (2S) **Staff**

**140. Dance History.** A history of dance from the primitive through Greek, medieval and renaissance periods into the theatrical dance forms: ballet and modern. (3W) **Fuller**

**145. Alcoholism and Education.** The alcohol problem is considered from the physiological, psychological, sociological, educational, historical, and legal aspects. The development of a correlated attack on the problem is emphasized. (3S) **D. Nelson**

**150. Methods in Dance.** The place of various types of dance in the physical education program. Emphasis given methods of teaching these activities and practice in teaching class members. (2S) **Fuller**

**151. Techniques of Dance.** Techniques of a variety of dance types, with emphasis on ballet and modern. (2S) **Staff**

**153. Leadership in Dance.** An advanced class in dance leadership to meet needs of students who expect to teach social or square dancing in schools or churches. Prerequisite: one quarter of social or square dancing. A syllabus is required. (2S) **Staff**



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- 157. Social Recreation Leadership.** Practical experience in conducting social recreational activities, such as for church, school and civil groups. Prerequisite: P.E. 83. Time and credit arranged. (F, W, or S) **Staff**
- 160. Techniques in Physical Education for Women.** Designed to develop teaching techniques in soccer, speedball and volleyball. (2F) Taught alternate years. Not taught 1958-59. **Staff**
- 161. Techniques in Physical Education for Women.** Designed to develop teaching techniques in basketball. Consideration is also given to officiating basketball. (2W) Taught alternate years. Not taught 1958-59. **Staff**
- 162. Techniques in Physical Education for Women.** Designed to develop teaching techniques in softball and field hockey. (2S) Taught alternate years. Not taught 1958-59. **Staff**
- 165. Techniques in Physical Education for Women.** Designed to develop teaching techniques in stunts and tumbling. (2S) Taught alternate years. **Staff**
- 175. Winter Survival and Recreation.** Lectures and field trips to teach students ways of living in the wilderness under adverse weather conditions and how to participate and enjoy out-door, winter sports. Students must provide adequate clothing for field trips. (3W) TTh 9:00. **Jensen**
- 177. Physical Education.** Designed to give a philosophy of Physical Education in the elementary school. Emphasis is on program planning, teaching techniques, the direction and participation in elementary Physical Education activities and the selection of activities that will help satisfy the needs of the elementary school child. (3F, 3W, 3S) **Downs**
- 179. Camping and Camp Craft.** Training in camp technique and camp leadership. Different types of camps and their organization, supervision, equipment and safety. Several short hikes and an overnight camp are conducted during the course. (2S) **Mendini**
- 180. Methods in Baseball.** Fundamentals of baseball, team play, training and strategy. (2S) Taught alternate years. Not taught 1958-59. **J. Nelson**
- 182. Physical Education.** Designed to gain an understanding of the elementary school Physical Education program. Curriculum, facilities, equipment, and the teaching of activities are emphasized. Emphasis is also placed on activities as specified in the Utah State Course of Study for the elementary school. (3W, 3S) **Downs**
- 183. Interpretation of Physical Education Objectives.** Results and values of Physical Education activities in terms of development, adjustment and standards. (3F) **Hunsaker**
- 184. Administration of Physical Education.** Administration procedures in Physical Education in the high school; curriculum and program planning. (3S) **Hunsaker**
- 188. Methods in Football.** Fundamentals of football, theory and practice; details of each position on the team; training, and managing; complete technique of developing offensive and defensive tactics. (2W) **Faunce**
- 189. Methods in Basketball.** Coaching and training of basketball teams; passing, dribbling, and pivoting, with emphasis on the psychology of the game; methods of defense and offense. (2F) **Baker**
- 190. Methods in Track.** Fundamentals in track and field training, and the conduct of athletic meets. Taught alternate years. (2S) **Maughan**
- 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. (3S) **Staff**
- 192. Tests and Measurements in Physical Education.** Practical studies of tests and technique of test construction. (3W) **Hunsaker**
- 194. Problems of Athletics.** Discussion problems in athletics relative to public relations, athletic management, administration of athletics, purchase of equipment, schedules, plant layout, etc. (3S) **Staff**
- 196. Organization of Recreation.** Problems of organization and administration of community recreation departments, including staff, facilities, program of activities, and office management. Problems of recreation surveys, legislation, property acquisition, finances, construction and maintenance, and securing community and school co-operation in a united recreational program. (3S) **Jensen**
- 250. Reading and Conference.** Credit arranged. Provides for individually directed study. **D. Nelson**
- 271. Research and Thesis Writing.** Credit arranged. **Hunsaker**
- 295. Problems in Physical Education.** (3F, 3W, 3S) **Hunsaker**
- 299. Physical Education Seminar.** (F, W, S) Credit arranged. **D. Nelson**

# Library Science

ASSOCIATE PROFESSOR *M. Abrams*, UNIVERSITY LIBRARIAN; INSTRUCTORS *I. M. Logan*, *V. Ransom*, *A. M. Smith*.

## Office on Library Mezzanine

Library Science may be used as a teaching minor in connection with a major in Education. This minor prepares the student for a Library Certificate, issued by the State Department of Public Instruction, and for a position as school librarian on the elementary or secondary level. A teaching minor of not fewer than 18 credits can be selected from the Library Science courses.

Courses required for an Elementary Library Certificate are English 122, L. S. 120, and L. S. 150; for Secondary Library Certificate, L. S. 120, L. S. 150, and L. S. 155.

From the following five elective courses three hours may be used to satisfy the requirements of the Northwest Association of Secondary and Higher Schools: Education 107, 161; English 122, 123; Speech 118.

## Library Science Courses

1. **Introduction to Librarianship.** A preview of the library profession. (2F, S) **Smith**
50. **Reference Materials.** Basic reference tools and an introduction to the library. (3F) **Logan**
100. **Advanced Reference and Bibliography.** Principal reference materials in the major subject fields. Methods of bibliography. (3W) **Logan**
113. **Book Repair and Binding.** Limited to Library Science minors. (2S) **Staff**
120. **Cataloging and Classification.** Dewey decimal system of arranging books and the methods of preparing a library card catalog. (4W) **Ransom**
150. **Library Administration.** Procedures and techniques of library operation. (3S) **Smith**
155. **Book Selection.** The materials used and records required in ordering books. (3W) **Smith**
160. **Art of the Book.** The history of book-making, printing, and libraries. (3F) **Ransom**
170. **Readings and Conference.** Any quarter. Limited to Library Science minors. Prerequisite: Instructor's approval. Time and credit arranged. (F, W, S) **Staff**

*Education best fulfills its high purpose when responsibility for education is kept close to the people it serves.*

# Department of Psychology

## (Psychology and Guidance)

PROFESSORS A. N. Frandsen, HEAD, E. H. Himes; ASSOCIATE PROFESSORS H. C. Sharp, D. R. Stone; ASSISTANT PROFESSORS P. Newman, B. H. Pubols, Jr., E. W. Wright.

Office in Main 175

Psychology is a scientific approach to understanding people. Its main purpose is improvement of human efficiency, usefulness, and happiness. Courses in psychology contribute, therefore, to both professional training and personal development of students in nearly every department of the University.

A major, and preferably a master's degree, in psychology should prepare you professionally (1) for guidance and psychological counseling in high schools as a certified counselor or school psychologist; (2) for teaching psychology, study habits, mental health, and personality development in high schools; (3) for diagnostic and remedial teaching, and for dealing with personality and conduct problems of children in elementary schools and in child guidance clinics; (4) (with additional courses in Education) as a teacher of exceptional children; (5) as a clinical psychologist (with additional graduate training) in mental hygiene clinics and hospitals; (6) for personnel work (at the junior professional level) in industry, the U. S. Employment Offices, various Civil Service positions, and in the military services, and (7) for further graduate study in psychology, education, child development or social work. Psychology is also a suitable major if you are planning to study medicine, nursing, law, social work, or personnel work after graduating with a bachelor's degree.

The Department of Psychology and Guidance has arrangements with schools, social welfare agencies, juvenile courts, the state industrial school, and a mental hospital, by which graduate students and some seniors can have practical experience in the general field of clinical psychology. The experiences include educational and vocational counseling; diagnosis and guidance of gifted, subnormal, and delinquent children; diagnosis and treatment of conduct and personality problems; diagnosis and remedial instruction for achievement difficulties in school subjects; teaching psychology in high school or college; teaching exceptional children; and for various kinds of psychometric work.

*Lower Division Preparation for Psychology.* The best preparation for psychology is basic training in biological science, social science, literature, mathematics and physical science. In completing the group requirements, it is recommended that the following courses be included: Physiology 4; Sociology 70; English 40, 45, and other literature (novel and biography) courses; Physics 7; Mathematics 34, 35, and desirably additional mathematics courses for students with interest in the subject. The minimum of 40 hours in the "group requirements" might well be exceeded. Psychology courses for lower division students expecting to major in psychology are Psychology 53, 71,

and, if desired before attaining upper division status, 100, 105, and 112.

*Requirements for a major in psychology* include 40 credits of approved courses from the following: Psychology 53, 71, 100 or 105, 112, 127, 140 or 145, 161, 183, 281, 282; and electives from psychology 80, 102, 105, 108, 114, 115, 121, 123, 155, 175, 191; Sociology 170; Education 110; Speech 167, or 173. As upper division electives, Zoology 111; Physiology 121, 122, 123; the Education courses for teacher certification; Sociology 130, 153; S. W. 165, 270; and upper division courses in literature.

A *minor in psychology* (which should include Psychology 53, 71, 100 or 105, 112, 140 or 145, 161, 281, and 183) is recommended for high school teachers who expect to participate in the school guidance program, social workers, students majoring in speech correction, students whose major is business administration, and students majoring in other social sciences.

### Graduate Study

*Master of Science Degree in Psychology.* Programs of study for this degree are planned in consultation with your major professor and an advisory committee. A well-balanced program to meet your professional objectives may be arranged to include courses from psychology and other pertinent fields. In preparation for meeting the requirements for the Professional School Counselor's Certificate, for example, courses mainly from psychology and education would be chosen. Lists of the prescribed courses for this certificate and for other special professional objectives may be obtained from the Department Head. Besides the courses required for a specific pro-

fessional objective, the Master of Science degree in psychology should include, during graduate or undergraduate study, courses in the following areas of psychology: (1) general and experimental, (2) systems and history, (3) learning, (4) child and adolescence (included in educational), (5) clinical psychology, (6) mental hygiene, physiological and abnormal psychology, (7) social psychology, (8) personality, (9) statistics, and (10) research thesis. Besides additional courses from those listed in each of the above 10 areas, courses planned especially for graduate students are: Psychology 115, 123, 175, 191, 200, 202, 205, 212, 213, 214, 216, 217, 280, 281, 282, 284, 285, 286, 287 or 288. For students who have not majored in psychology, 30 hours of approved courses in psychology or closely related fields are a prerequisite to begin graduate study in psychology.

*Master of Science Degree in Guidance.* Any able student who has a teaching certificate and a total of 30 credits in Education or/and in Psychology is eligible to begin study for this degree. Included in the courses required are: Education 110; Guidance 187, 213; and Psychology 123 or 140, 183, 200, 202 or 205, 212, 280, 281, 282, 285, 288; and a thesis in the field of guidance. These are also the courses required for a Professional Counselor's Certificate.

*Doctorate in Educational Psychology and Counseling.* The Department of Psychology and Guidance in cooperation with the Department of Education, has planned a program of advanced graduate study in counseling, school clinical psychology, and educational psychology that leads to the Ph.D. degree in Educational Psychology.

The program requires two years of graduate study (partly supervision of individual study) beyond the M.S. degree, plus a six months' internship in school, mental hygiene clinic, hospital, or social agency. Prospective candidates interested in learning more about this program should confer with Dean John C. Carlisle or Professor Arden Frandsen.

## Psychology Courses

**33. Mental Hygiene for College Students.** Deals with the common personal and social problems of normal people. It is intended as a basis for improving self-understanding, personal and social effectiveness, happiness and emotional health. (3F, W, S) **Sharp**

**53. Elementary General Psychology.** Principles of human behavior and experience, including: nature of personality; factors determining development; how we learn, observe, and think; motives of human conduct; dealing with people; maintenance of personal efficiency and mental health. For lower division students in all colleges of the University. (5F, W, or S) **Staff**

**71. Experimental Methods in Psychology.** A study of the scientific methods and of specific experimental procedures applied in the study of fundamental problems in psychology. Prerequisite: Psychology 53. (3W) **Pubols**

**80. Reading and Study Skills.** A practical course, highly individualized, designed to aid students in improving the efficiency of their work and study habits. Individual appointments arranged for one-third of the time. (2F, W, or S) **Stone**

**100. Human Growth and Development.** A study of the developmental characteristics and processes of human physical and psychological development from birth to maturity. For prospective elementary and secondary teachers. (3F, 3W, 3S) **Staff**

**102. Educational Psychology for Secondary Teachers.** A professional course for prospective high school teachers. Designed to develop insight of conditions necessary to effective learning. Considers individual differences in students, and means of improving junior and senior high school teaching. Prerequisite: Psychology 100. (3F, W, or S) **Stone**

**105. Child Psychology and Development.** The roles of maturation, learning, and environmental conditions in the motor, mental, social, and emotional developments in children from birth to adolescence. Generalizations with respect to dynamics of personality, individual differences, emotions, motivation, how children learn, observe, and think, are applied to understanding and guiding children's behavior in home, school, and community. Prerequisite: Psychology 53. (3F, W, S) **Frandsen**

**108. Educational Psychology for Elementary School Teachers.** 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. Prerequisite: Psychology 53. (3F, W, S) **Frandsen**

**112. Application of Statistics to Education and Psychology.** Elementary study of statistical procedures in handling test scores in schools, and of the concepts needed to read current educational and psychological literature. May be taken by last quarter sophomores who have taken Psychology 53. (3F or S) **Frandsen**

**115. Seminar, Readings and Discussions on Current and Special Topics in Psychology.** Weekly discussions of topics in current magazines plus independent reading either of some especially significant book or periodical literature on a specialized topic, selected according to student's interest. Two credits each quarter. May be taken 1, 2, 3 quarters. (2F, W, S) **Staff**

**121. Individual Differences.** The nature, extent, and causes of human differences, and the implications and applications of a recognition of these differences in several major life activities. The concepts of human differences have useful applications in the work of students majoring in other social and biological sciences. (3S) **Sharp**

**123. Psychology of Exceptional Children.** The development and behavior characteristics of exceptional children. The education, home management, social control, and psychological treatment suited to their needs. Groups included are the mentally deficient, physically handicapped, the exceptionally gifted, and children having serious personality and conduct problems. (3W, Su.) **Sharp**

**127. Psychology of Learning.** A comprehensive study of descriptions of learning, factors related to efficiency, explanatory theories of learning, and of applications of the facts and explanatory principles to guiding learning in school and out-of-school situations. Prerequisite: Psychology 53. (3S) **Pubols**



**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: Psychology 53. (3S)

Sharp

**145. Mental Hygiene.** Designed for teachers and other workers in social occupations. Intended to promote understanding of emotional and social adjustment, and as a basis for guiding children, adolescents and adults toward improved mental health. Prerequisite: Psychology 53. (3W)

Sharp

**155. Psychology of Business and Industry.** Methods and explanatory principles of psychology are applied to understanding several general problems of business and industry, including vocational choice, selection of employees, advertising and selling, marketing and consumer research, conditions for efficient work, and psychological aspects of training for work in business and industry. (See also Business Administration 155) Prerequisite: Psychology 53 or Instructor's approval. (3F)

Himes

**161. Social Psychology.** A study of the acquisition of personality or "self." The effect of society on the individual, and the individual's reciprocal effect on society are considered in terms of such topics as propaganda, institutional behavior, "social" neuroses, morale, leadership, and membership. Prerequisite: Psychology 53. (3W)

Staff

**162. Social Psychology of Teaching.** An application of the concepts of "self" and of "group dynamics" to teaching, and to leadership and participation in other social situations. (3W)

Staff

**165. Psychology of Military Leadership.** (3S)

Newman

**175. Physiological Psychology.** Physiological mechanisms underlying normal and abnormal behavior, with special attention to those operating in both organic and non-organic disturbances. Prerequisite: Psychology 53 and 71. (3S)

Pubols

**183. Theory and Techniques of Counseling.** Principles and techniques of counseling students on problems of curriculum planning and vocational choice, on improving methods of study, and emotional and social adjustment. Applications made also to administrative, supervisory teaching, and other inter-personal relation situations. (3S)

Wright

**191. History and Systems of Psychology.** History of psychology and a critical comparison of the several systematic points of view on major problems in psychology. (3S)

Staff

**200. Advanced Educational Psychology.** Advanced study of aims and curricula, conditions of effective learning, provisions for individual differences, and evaluation of achievements in both elementary and secondary schools, from the points of view of learning theory and experiments in psychology and education. Intended especially for supervisors, principals, and teachers working on graduate degrees. Thesis problems are suggested. (3Su.)

Staff

**202. Psychology of Adolescence.** Growth, psychological and social characteristics and development, educational and guidance needs, and adjustment problems of adolescents as met in schools, homes, and communities. Prerequisite: Psychology 102. (This course and Psychology 200 provide training in advanced educational psychology for graduate students in secondary education and in psychology. (3Su.)

Staff

**205. Problems in Child Psychology and Guidance.** Elementary school child guidance problems. Study of the roles of teachers and child guidance specialists in promoting mental health and in diagnosing and treating problems of achievement, social adjustment, and emotional adjustment. The course may be considered as an advanced course either in child psychology or in elementary school guidance. (3F)

Frandsen

**212. Treatment of Psychometric Results.** Statistical methods of representation, and analysis of interrelationships of psychological test scores. (2W)

Frandsen

**214. Independent Readings in Psychology.** For students who cannot participate in the discussions in Psychology 115, this course provides opportunity for independent readings and conferences on topics selected by the student. (2F, W, S)

Staff

**216. Research for Master's Thesis in Psychology.** Credit and time arranged with the approval of a member of the Department of Psychology and Guidance. (F, W, S)

Staff

**217. Research for Master's Thesis in Psychology.** Credit and time arranged with the approval of a member of the Department of Psychology and Guidance. (F, W or S)

Staff

**280. Personality.** An advanced study of the organization, development, dynamics, and appraisal of personality. Theories and empirical investigations of personality are studied as a basis for arriving at integrated concepts of the nature and development of personality. (3F)

Staff

**281. Psychometrics Applied to Guidance.** For school counselors, personnel workers, social workers, and clinical psychologists. Considers

selection, evaluation, administration, interpretation, and practical uses of tests of intelligence, aptitudes, interests, personality and quality of personal and social adjustment. Prerequisite: Psychology 53 and Elementary Statistics. For seniors or graduate students. (5F) Frandsen

**282. Individual Diagnostic Intelligence Testing.** Theory and techniques of testing, including practice in the administration of (a) the Stanford-Binet and other individual tests especially suited to psychological examination of children, and (b) the Weschsler-Bellevue and related tests for use with adolescents and adults. Interpretation of test data. (5W) Frandsen

**284. Hospital Treatment of Mental Patients.** Seminar and staff conferences on personality appraisals, diagnoses, and treatment of mental hospital patients. Students observe and participate in treatment. (4F, W, S) Staff

**285. Projective Methods for the Study of Personality.** The dynamics of human adjustment and the common projective methods for revealing motives, attitudes, and adjustment mechanisms in individual personalities. (5S) Frandsen

**286. Problems in Counseling and Clinical Psychology.** Individual case studies of children and adolescents presenting problems of diagnosis, guidance, remedial teaching, and psychotherapy. (2F) Staff

**288. Practice in Counseling Psychology.** Arrangements are made for obtaining experience under staff supervision in vocational guidance; diagnostic testing and writing of in-

terpretative reports; counseling; psychotherapy; diagnostic and remedial teaching. Subjects include children, adolescents, and adults in schools, institutions for the mentally retarded and for delinquents, and patients in mental hospitals. Psychological procedures and institutions are selected according to qualifications and interests of each student. Time and credit arranged. (F, W, S) Staff

**300. Educational - Psychological Theories in Practice.** From observation and wide reading of educational-Psychological theories—on motivation, learning, individual differences, personality, interpersonal relations, evaluation, etc.—hypotheses will be formulated for checking by observation in selected school situations, both at the elementary and secondary levels. Class activities include two hours each of observation and discussion. (3W) Frandsen

**314. Advanced Independent Study in Psychology.** (F, W, S) Staff

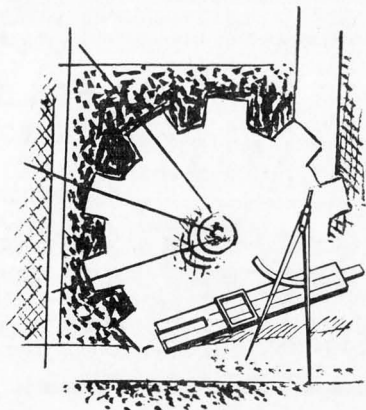
## Guidance Courses

**213. Organization and Administration of Guidance.** Development and evaluation of plans for utilization of school and community resources in guidance. (3S) Wright

**287. Occupational Information.** Collection, classification and uses of occupational information in counseling. (2W) Wright

**297. Workshop in Guidance.** A faculty or part of a faculty in a school or school district studies, evaluates, and attempts to improve the use of the school's resources for more effective guidance in its several phases. (3F, W, S) Staff

*The desire to work and to cooperate for success comes from within. It cannot be legislated.*



## *College of Engineering*



D. F. Peterson, Jr., Dean

## College of Engineering

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Master of Science

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Irrigation Engineer

Doctor of Philosophy

# College of Engineering

D. F. Peterson, Jr., Dean

## Office in Engineering 204

The College of Engineering is comprised of the Departments of Civil and Irrigation Engineering, Electrical Engineering, Mechanical Engineering, Tool Engineering, Industrial and Technical Education; and the Engineering Experiment Station.

*Undergraduate and graduate degrees* are offered in Agricultural, Civil, Irrigation, Mechanical, Electrical, and Tool Engineering. There is also a two-year program in Chemical Engineering.

In Engineering, the course of study includes Mathematics and Basic Science, Engineering Science, Engineering Analysis and Design, Basic Communications, and Humanistic-Social Studies. A reasonable choice of elective subjects is allowed you. If you plan to do graduate study in Engineering you may also take additional mathematics and physics.

The objectives of the undergraduate Engineering curricula is to provide thorough, fundamental, technical education necessary for professional Engineering work of the highest grade, and to assure the development of those physical, intellectual, moral, and social qualities essential to high professional achievement. The recommendations of the Engineers' Council for Professional Development have been carefully studied in planning the Engineering curricula.

*Under the Department of Industrial and Technical Education*, undergraduate and graduate degrees are offered in Industrial Arts and Trade and Industrial Education. Undergraduate degrees are also

offered in Industrial Technology, with majors in Aeronautical, Automotive, and Welding Technology. Certificates are awarded for completion of two-year technical courses in Aeronautical, Automotive, and Welding Technology. The Department of Industrial and Technical Education has the primary missions of educating teachers in the industrial fields and of providing high-level technical education necessary for direct employment by industry.

*Admission.* For general requirements, see introductory section of this catalog. For Engineering, you should have one and a half units of high school algebra and one unit of plane geometry. If you are deficient in these mathematics credits you may be admitted conditionally to Engineering and must take Math 34 and/or Math 42. At all Engineering colleges increased time beyond four years is necessary for students entering with mathematics deficiencies to complete an accredited engineering curriculum unless this deficiency is made up during a summer session. The best plan at Utah State University is to take Math 34 during the summer session immediately following high school graduation, although you may take Math 97 during the summer session between your freshman and sophomore years, or Math 110 during the following summer. As an Engineering student you are expected to have completed Math 110 prior to taking junior-year courses. If you wish to take additional courses beyond those prescribed in the various Engineering curricula, or if you plan to take Advanced Air or Military



Science, you should arrange a five-year program of study.

Admission requirements for the Industrial and Technical Education curricula are the same as for general admission to the University.

*Scholarship.* You must maintain an average of "C" or higher to remain in the College of Engineering and to be eligible for graduation. The faculty reserves the right to accept toward graduation only credits with a grade of "C" or higher. If you receive a grade of "D" in any mathematics or professional sequence course you must repeat this course before proceeding in the sequence. It is strongly recommended that physics courses with "D" grades be repeated.

*Graduation.* As a candidate for graduation you must satisfy the general University requirements listed in "Academic Regulations," except, for Engineering students, those pertaining to group requirements. You must, in addition, satisfy the requirements of the prescribed curriculum of your major.

*Opportunity for Graduates.* Rapidly increasing industrial development, the need for control and development of natural resources, and rapid advances in transportation and communication assures a continuing strong demand for graduates in Engineering and the Industrial and Technical Arts and Sciences, and for teachers in these fields. Graduates of the Engineering College may expect ample opportunity for satisfying and remunerative professional employment.

*Professional Societies.* Professional association and advancement are promoted by activities of student branches of national professional societies. The following are represented, either by institutional membership, faculty membership, or student chapter: American Con-

crete Institute, American Geophysical Union, American Road Builders Association, American Society of Agricultural Engineers, American Society of Civil Engineers, American Society of Mechanical Engineers, American Society for Engineering Education, American Society of Tool Engineers, the Institute of Radio Engineers, American Vocational Association, American Industrial Arts Association, Society of Automotive Engineers, American Welding Society, and others.

You are encouraged to affiliate with these societies and participate in their activities.

*Honor Societies and Scholarships.* The Alpha Delta Chapter of Sigma Tau was installed at Utah State University in February, 1951. Membership is elected from junior and senior Engineering students whose scholarship is in the upper third of their class.

Graduating seniors in the upper ten percent of the class are eligible for membership in Phi Kappa Phi. Graduate Students may be elected to Sigma Xi, honorary scientific society.

Several scholarships are available to Engineering students. (See "Scholarships, Fellowships, Awards" elsewhere in catalog.)

*Common Freshman Curriculum in Engineering.* Except for a one-hour orientation course and a departmental elective, both in the spring quarter, all freshman curricula in Engineering are identical. While you are urged to make a tentative choice of your Engineering major upon entrance, a final decision may be deferred until spring quarter. Since the first two years in any Engineering curriculum are very similar, you can change your major within this period without serious loss of time.

# Department of Civil and Irrigation Engineering

(Civil, Irrigation, and Agricultural Engineering)

PROFESSORS C. H. Milligan, HEAD, O. W. Israelsen, EMERITUS, A. A. Bishop, J. E. Christiansen, V. E. Hansen, H. R. Kepner, D. F. Peterson, Jr.; ASSOCIATE PROFESSORS W. A. Cordon, S. H. Daines, E. L. Rich, R. K. Watkins; ASSISTANT PROFESSORS B. H. Andersen, J. M. Bagley, J. R. Barker, V. H. Jarrett, F. W. Kiefer, W. A. Tingey, J. D. Wadsworth; RESEARCH ASSOCIATE F. Haws; INSTRUCTOR AND PROJECT ENGINEER FOR COLLEGE-INDUSTRY FARM ELECTRIFICATION COMMITTEE G. E. Stringham; COLLABORATORS A. S. Humphreys, C. W. Lauritzen, Lyman S. Willardson.

## Office in Engineering 303

This department offers the Bachelor of Science degree in Civil Engineering and in Agricultural Engineering, and collaborates with the Agronomy Department in giving the Bachelor of Science degree in Irrigation and Soils.

*Major in Irrigation and Soils.* This joint major between the Departments of Agronomy and Civil and Irrigation Engineering is designed for students who wish to specialize in the management of land and water, in irrigation agriculture, without specializing in all of the technical engineering phases of irrigation. Extension specialists, certain civil service positions, and farm managers represent some types of employment available to graduates in this field.

An outline of courses with details concerning course requirements can be obtained from the Department of Agronomy or the Civil and Irrigation Engineering Department.

*Research Assistantships.* This department conducts engineering research through the Engineering and Agricultural Experiment Stations, and collaborates with the Agricultural Research Service, U. S.

Department of Agriculture, in soil-water research. These research projects provide opportunities for qualified students to act as part-time research assistants and thereby obtain experience and compensation for their services. These projects also provide research opportunities for graduate students working on their theses.

## Civil and Irrigation Engineering

*Civil Engineering* consists of the economic application of the laws, forces, and materials of nature to the design, construction, and operation of engineering structures and projects, including 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. Civil Engineering Curriculum

The Civil Engineering curriculum has been accredited by the Engineers Council for Professional Development.

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## Civil Engineering Curriculum

Freshman			
Course	F	W	S
C.E. 1, 2, 3 .....	1	1	1
E.D. 61, 62, 63 .....	3	3	3
Math 35, <sup>1</sup> 46, 97 .....	5	5	5
Chem. 10, 11 or 3, 4 .....	5	5	5
Geology 3, or Chem. 12, or 5 .....	...	...	5
English 1, 2, 3 .....	3	3	3
M.S., A.S., or P.E. ....	1	1	1
	18	18	18
Sophomore			
Course	F	W	S
C.E. 84, 82, 85 .....	4	4	3
C.E. 101 .....	...	...	4
Math 98, 99, 110 .....	5	5	5
Physics 20, 21, 22 .....	5	5	5
Humanities <sup>2</sup> .....	3	3	...
M.S., A.S., or P.E. ....	1	1	1
	18	18	18
Junior			
Course	F	W	S
C.E. 102, 103, 104 .....	4	4	4
C.E. 140, 141, 142 .....	3	3	3
E.E. 104, 105, 106 .....	3	3	3
M.E. 196, 197, 198 .....	3	3	3
Humanities .....	5	...	...
Humanities or C.E. 173 .....	...	5	...
C.E. 173 or Humanities .....	...	...	5
	18	18	18
Senior			
Course	F	W	S
C.E. 105, 106, 107 .....	6	6	5
C.E. 150, 128, 195 .....	4	4	5
C.E. 198 .....	1	1	1
C.E. 146 or C.E. 193 .....	...	3	...
A.E. 145 or C.E. 194 .....	...	...	4
Technical Electives <sup>3</sup> .....	4	4	4
Humanities .....	3	...	...
	18	18	19

## Suggested Five-Year Curriculum in Civil Engineering

This curriculum is suggested for you if you wish to broaden your education, if you wish to take advanced military science or air science, or if you are deficient in entrance requirements.

You may wish to obtain a better foundation in mathematics, physics, or other branch of education. You may of necessity have to work a considerable amount of time to stay in school, or you may wish to par-

ticipate in athletics or other extra-curricular activities. The five-year curriculum is designed to meet these special needs. If you desire the five-year curriculum you should consult your advisor to work out a satisfactory program.

First Year			
Course	F	W	S
C.E. 1, 2, 3 .....	1	1	1
Math. 34, <sup>1</sup> 35, 46 .....	3	5	5
Chem. 10, 11 .....	5	5	...
Geology 3 .....	...	...	5
English 1, 2, 3 .....	3	3	3
Plane Geometry <sup>1</sup> or elective .....	3	...	...
M.S., A.S., or P.E. ....	1	1	1
	16	15	15
Second Year			
Course	F	W	S
C.E. 84, 82, 85 .....	4	4	3
E.D. 61, 62, 63 .....	3	3	3
Math. 97, 98, 99 .....	5	5	5
Humanities <sup>2</sup> .....	3	3	3
M.S., A.S., or P.E. ....	1	1	1
	16	16	15
Third Year			
Course	F	W	S
Physics 20, 21, 22 .....	5	5	5
Math. 110 .....	5	...	...
Humanities <sup>2</sup> .....	3	5	5
C.E. 128, C.E. 101 .....	...	4	4
Adv. M.S. or A.S. ....	3	3	3
	16	17	17
Fourth Year			
Course	F	W	S
C.E. 102, 103, 104 .....	4	4	4
C.E. 140, 141, 142 .....	3	3	3
E. 104, 105, 106 .....	3	3	3
M.E. 196, 197, 198 .....	3	3	3
Adv. M.S. or A.S. ....	3	3	3
	16	16	16
Fifth Year			
Course	F	W	S
C.E. 105, 106, 107 .....	6	6	5
C.E. 195 .....	...	...	5
C.E. 146 or C.E. 193 .....	...	3	...
A.E. 145 or C.E. 194 .....	...	...	4
C.E. 198 .....	1	1	1
Technical Electives <sup>3</sup> .....	4	4	4
Humanities .....	5	3	...
	16	17	19

<sup>1</sup>If you are deficient in high school mathematics, Algebra B, register for Math. 34, Introduction to College Algebra, Fall Quarter. You will have the opportunity to make up

## Graduate Study

This department offers the *Master of Science degree* in Civil Engineering, Agricultural Engineering, and in Irrigation and Drainage Engineering. It also offers the *professional engineering degree* in Irrigation and Drainage Engineering and the *Doctor of Philosophy degree* in Agricultural Engineering, Civil Engineering, Irrigation and Drainage Engineering, and collaborates with related departments in offering the Doctor's degree in Irrigation Science.

Curricula and research leading to an advanced degree either on the Master's degree or Doctor's degree level are supervised by a Graduate Committee appointed by the dean of the School of Graduate Studies. Staff members of the major department and of closely related departments serve on these committees. All study and research programs must be approved by such a committee before you are admitted to candidacy for an advanced degree. The study and research program for a particular degree must also satisfy all of the requirements listed in this catalog under the School of Graduate Studies.

Inasmuch as students come to the University with different backgrounds and with different objectives, no rigid curricula are suggested for advanced degrees. These curricula must contain certain basic courses in mathematics and fundamental engineering subjects. As a

graduate student, particularly on the doctorate level, you may obtain part of your work at other accredited universities upon approval of your Graduate Committee.

As a candidate for an advanced degree you are given oral and/or written examinations to determine your adequacy of preparation. You may be required to take additional course work where areas of weakness are indicated by such examinations.

No advance guarantees can be made as to the time required to obtain any advanced degree. Ordinarily, however, a properly prepared student may obtain the Master's degree in one year and the Doctor's degree in three full years of study after the B. S. degree. Longer times are required if you have other employment. The time will depend entirely on your performance and your ability to satisfy your committee that you have earned the degree.

As a prospective graduate student you may obtain additional information by contacting either the Civil and Irrigation Engineering Department or the dean, School of Graduate Studies.

## Civil and Irrigation Engineering Courses

**1. Engineering Orientation.** A preview of engineering; what engineering is, what engineers do, what aptitudes are essential to success, and philosophy of engineering education. (1F, W)  
Peterson

mathematics deficiency during Summer Sessions between Freshman and Sophomore years. Otherwise you may choose the five-year curriculum. If you have not had high school plane geometry you must take this course without credit.

\*Humanities may be selected from the following: History, government, literature, sociology, philosophy, psychology, religion (ac-

cepted by the university for college credit), and fine arts.

\*Technical electives may be selected from the following: C.E. 120, 121, 122, 127, 130, 131, 132, 147, 181, 182; A.E. 143, 145, 148, 149, and 160; Advanced Mathematics or graduate courses with approval of instructor. (Courses will be taught only for classes of eleven or more students.)

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**2. Slide Rule Instruction.** Practice in the use of the Log-Log slide rule. Prerequisite or concurrently: Math. 46. (1F, W, S) Watkins, Rich  
**3. Civil Engineering Orientation.** Engineering problems and lectures covering the various divisions of Civil Engineering. (1S) Staff

**80. Office Practice: For Foresters.** Practice in preparing office plans from forestry surveys. Prerequisite: C.E. 81 or equivalent. Two labs, one lecture. (3W) Tingey

**81. Plane Surveying.** Primarily for Forestry students. Use of tape, hand level, level, transit, compass, and plane table. Differential and profile leveling, traversing, plotting, mapping, and care of engineering instruments. Prerequisites: Math. 35, 46. One lecture, two labs. (3F, S) Tingey

**82. Mapping and Office Practice.** Practice in mapping various kinds of engineering surveys. Prerequisite: C.E. 81 or 84. Two lectures, two labs. (4W) Kiefer

**84. Elements of Surveying.** Theory of surveying. Terminology, computations, areas, volumes, field astronomy, and general surveying. Prerequisites: Math. 35, 46. Two lectures, two labs. (4F) Kiefer

**85. Advanced Surveying.** Problems in leveling, curves, spirals, stadia, plane table, and city surveying. Prerequisites: C.E. 82 and C.E. 84. One lecture and 2 labs (3S) Kiefer

**101, 102, 103, 104. Engineering Mechanics and Strength of Materials.** Includes statics, dynamics, and strength of materials. The following subjects are studied: resultants and equilibrium of force systems, friction, center of gravity, moments of inertia, kinematics and kinetics, stress and strain in tension and compression members, shafts, beams, columns, combined and principal stresses, fatigue, impact, energy loads, etc. Prerequisite: Math 99 and Physics 20. Three lectures and one lab. (4F, 4W, 4S, 4Su) Rich or Watkins

**105, 106, 107. Structural Theory and Design.** Introduces the analysis and design of structures and their elements. C.E. 105 and 106 cover stress analysis and design in steel, timber, and reinforced concrete. In C.E. 107 are given more comprehensive problems in the design of buildings and bridges. Prerequisites: C.E. 101, 102, 103. Fall and Winter quarters, recitation daily, one lab. Spring quarter, five recitations. (6F, 6W, 5S) Kepner

**120, 121, 122. Highway Engineering.** Fall quarter is devoted to general highway engineering, including current aspects of the federal highway engineering program, econom-

ics, financing, surveys and plans, geometric design of rural highways, and highway drainage. Winter quarter deals with the sub-grade structure, stabilized roads, materials of highway construction, and the design of flexible and rigid pavements. Spring quarter, traffic problems, including the vehicle and the driver, traffic surveys, accidents, planning and design, traffic control, and regulations. Three lectures, one lab. (4F, 4W, 4S) Cordon

**127. City Planning.** Master plans, civic units, parks and playgrounds, utilities, housing, subdivisions, zoning, civic centers and airports. Three lectures. Prerequisite: C.E. 120. Two lectures, one lab. (3S) Cordon

**128. Non-Metallic Materials.** The nature and properties of non-metallic engineering materials. Includes testing materials in accordance with ASTM standards. Three lectures, one lab. (4W) Cordon

**130. Building Construction and Cost Estimating.** Construction methods used in fabrication and creation of buildings and practice in estimating costs. Three lectures, one lab. (4F) Kiefer

**131, 132. Structural Design Problems.** Problems in deflection of beams and trusses, analysis and design of statically indeterminate trusses and rigid frames. Open to seniors and to graduate students in C.E. C.E. 103 is prerequisite for C.E. 131 and C.E. 105 and 106 are prerequisites for C.E. 132. Three lectures and one lab. (4W, 4S) Kepner

**140, 141, 142. Fluid Mechanics and Hydraulics.** Properties of fluids, the principles of hydrostatics, flow of ideal and real fluids, principles of similarity, flow of fluids in pipes and open channels, measurement of fluid flow and hydraulic principles underlying the design and selection of tangential and reaction turbines and pumps. Prerequisites or concurrently: Physics 20, Math. 110. Fall, three lectures, Winter and Spring, two lectures and one lab. (3F, 3W, 3S) Kiefer

**144. Applied Hydraulics and Pneumatics.** Theory and practice in hydraulics and pneumatics as they apply to machine tools and controls. Prerequisite: C.E. 140. Two lectures, one lab. (3S) Hansen

**146. Design of Water Conveyance Irrigation Structures.** Application of principles of solid, fluid, and soil mechanics to the solution of engineering designs for earth canals, lined canals, flumes, transitions, and pipe lines. Prerequisites: C.E. 142, 150; concurrently, C.E. 106. Three lectures. Bishop



**147. Design of Water Control Structures.** Design of dams, diversion works, drops and chutes, spillways, wasteways, headgates, and check gates. Prerequisite: C.E. 146. Three lectures. (3S) **Bishop**

**150. Soil Mechanics.** Elementary physics of soil as applied to engineering problems. Moisture, plasticity, and capillary relationships. Percolation and the design of earth structures and foundations. Prerequisites: C.E. 103, 142. Three lectures, one lab. (4F) **Watkins**

**173. Hydrology and Meteorology.** The hydrologic cycle, including weather elements and climate, precipitation, evaporation, transpiration, infiltration, ground water, and runoff; methods of collection of hydrologic data and their use in water supply and flood control studies. Prerequisite: C.E. 141, or instructor's consent. Four lectures, one lab. (5W, 5S). **Bagley**

**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. Prerequisites: E.D. 63, C.E. 81 or 85, or senior standing in Forestry, Range or Wildlife Management, Geology, Landscape Architecture, Aeronautics, or Advanced Military Science. Three lectures, one lab. (4W) **Tingey**

**182. Route Surveying.** Theory and practice in highway curves and earth work, including methods used in highway, street, canal, pipe line and general project surveys. One lecture, one lab. (2S) **Tingey**

**191. Senior Project.** Research or testing project in some phase of engineering. You conduct minor research project under direction of faculty. Conducted cooperatively with C.E. 198 and English 111. (1W, 1S) **Staff**

**193. Municipal Water Systems.** Elements of design construction, and maintenance of waterworks systems. Treatment of public water supplies. Prerequisite: C.E. 142. Three lectures. (3W) **Bishop**

**194. Sewerage.** Principles of design, construction and maintenance of sewer systems. Treatment of sewage by physical, chemical and biological action and methods of final disposal. Prerequisite: C.E. 142. Three lectures, one lab. (4S) **Kepler**

**195. Contracts, Specifications and Engineering Economy.** Synopsis of the law of contracts. Writing of specifications. Financial and cost problems associated with engineering design, operation and construction. Determination of the economic alternatives in engineering. (6S) **Cordon**

**198. Senior Seminar.** Discussion of engineering subjects. Provides opportunity for both oral and written expression. Talks by visiting engineers. Required of all Civil Engineering seniors. Two lectures. (1F, W, S) **Milligan**

**201, 202. Advanced Structural Theory.** Review of elementary strength of materials, advanced topics in stress analysis involving central, torsional, and flexural loads. (3F, 3W) **Kepler**

**203. Advanced Structural Design.** Individual problems in the design of modern structures. Checking of designs by model analysis may be selected. Prerequisite: C.E. 132. (3F, W, S) **Kepler**

**210. Earth and Rock-Fill Dams.** Design of flexible type (earth or rock-fill) dams, utilizing naturally available materials. The theories of soil mechanics are used to check designs against criteria for structural stability and stability against seepage. Attention is given to foundations and construction details. Prerequisite: C.E. 150. (3W) **Peterson**

**211. Masonry Dams.** Design of rigid type dams. Stress, analysis and design of gravity, gravity-arch, multiple arch, and deck types of masonry dams. Timber, steel, and miscellaneous types. Time arranged. Prerequisite: C.E. 103. (3F) **Bishop**

**212. Appurtenances to Dams and Operation of Reservoirs.** Hydraulic and structural design of tunnels, gates, outlet channels, trash racks, etc. Operation of reservoirs for flood control and irrigation. Prerequisite: C.E. 142. (3S) **Staff**

**215. Hydro-Electric Design.** Selection of plant capacity from hydrological information. Effect of storage on capacity. Economic height of dams. Selection of equipment. Layout and arrangement of power plants. Prerequisite: C.E. 142. Time arranged. (3W) **Staff**

**220, 221, 222. Advanced Highway Engineering.** Economics of location and design, selection, improvement and maintenance, traffic control, administration and finance, and jurisdiction as applied to highways. Prerequisite: C.E. 122. (3F, W, S) **Cordon**

**230. Special Problems in Civil, Irrigation or Drainage Engineering.** Independent study of a chosen problem under the direction of a member of the department staff. You are expected to develop your initiative in pursuing these problems. Formal typewritten reports required. Prerequisite: Senior or Graduate standing. Time and credit arranged. (F, W, S) **Staff**

**241, 242. Intermediate Fluid Mechanics and Hydraulics.** Effects of pressure, inertia, gravity, viscosity, compressibility, and surface tension on the motion of fluids. Surface resistance, form resistance, and lift and propulsion. Dynamic similarity. Non-uniform flow in open channels. Prerequisites: C.E. 142, 196 or equivalents. (3F, 3W) **Hansen**

**243. Advanced Hydraulic Design.** Design of pipe lines, special flumes, spillways, water control structures, and hydraulic machinery. Prerequisites: C.E. 142, 147. (3S) **Hansen**

**245. Advanced Design of Drainage Systems.** Measurements of field permeability, hydraulics of wells, pumping for drainage, leaching and reclamation of saline soils, etc. (3W) **Bishop**

**250. Advanced Soil Mechanics.** Theories of seepage, capillarity, stress, consolidation, and stability are developed and applied to the practical design and construction of earth structures. Interpretation of laboratory tests is given special attention. Prerequisite: C.E. 150 or its equivalent. (3S) **Watkins**

**251. Advanced Soil Mechanics Laboratory.** Advanced laboratory work in soil mechanics. (1S) **Watkins**

**273. Advanced Hydrology.** Application of basic hydrologic principles to engineering investigations. Application of the unit hydrograph, infiltration analysis, hydrograph analysis, streamflow routing for reservoir operation and control, use and storage of groundwater. Prerequisite: C.E. 173. Three lectures. (3S) **Milligan**

**295. Sanitary Design.** Principles of design, construction and operation of water purification and sewage treatment plants. Prerequisites: C.E. 193, 194. (3W or S) **Kepner**

**298. Graduate Thesis.** Time and credit arranged. (F, W, S) **Staff**

**299. Graduate Seminar.** Time arranged. (1S) **Staff**

## Agricultural Engineering

*Agricultural Engineering* applies engineering science to the solution of agricultural problems in the areas of soil and water, farm buildings, farm power and machinery, electrification, and processing of agricultural products. The Agricultural Engineering curriculum at USU emphasizes irrigation and

drainage and water supply and utilization.

Service courses are offered in farm mechanics, farm machinery, farm power, farm structures, modern farm and home equipment, and irrigation and drainage. These service courses are open to all university students. They are particularly designed for students in Agriculture and Agricultural Education.

Academic work is supplemented by field trips, which you are required to take as a part of your course work. These field trips provide, under faculty guidance, first-hand study of engineering projects in different stages of completion.

The curriculum in Agricultural Engineering places special emphasis on irrigation and drainage and water supply and utilization. It is administered by the Civil and Irrigation Engineering Department, and qualified staff members listed in that department teach the courses in the curriculum.

### Agricultural Engineering Curriculum

Freshman				
Course	F	W	S	
C.E. 1, 2, 3 .....	1	1	1	
Math. 35 <sup>1</sup> , 46, 97 .....	5	5	5	
Chem. 10 or Chem. 3 .....	5	5	5	
Biology 1 .....	...	...	5	
E.D. 61, 62, 63 .....	3	3	3	
English 1, 2, 3 .....	3	3	3	
M.S., A.S., or P.E. ....	1	1	1	
	18	18	18	
Sophomore				
Course	F	W	S	
Math. 98, 99, 110 .....	5	5	5	
Physics 20, 21, 22 .....	5	5	5	
C.E. 84 .....	4	...	...	
Farm Crops .....	3	3	...	
Agron. 56 .....	...	4	...	
C.E. 101 .....	...	...	4	
Humanities <sup>2</sup> .....	...	...	3	
M.S., A.S., or P.E. ....	1	1	1	
	18	18	18	

<sup>1</sup>See page 146.

Junior				
Course	F	W	S	
C.E. 102, 103, 104 .....	4	4	4	
C.E. 140, 141, 142 .....	3	3	3	
E.E. 104, 105, 106 .....	3	3	3	
M.E. 196, 197, 198 .....	3	3	3	
Humanities <sup>2</sup> .....	5	....	....	
C.E. 173 or Humanities .....	....	5	....	
Humanities or C.E. 173 .....	....	....	5	
	18	18	18	

Senior				
Course	F	W	S	
C.E. 105, 106 .....	6	6	....	
C.E. 150, 128, 195 .....	4	4	5	
Farm Machinery .....	....	4	....	
Farm Power .....	....	....	5	
A.E. 143, 145 .....	4	....	4	
A.E. 148 .....	....	....	4	
Humanities <sup>2</sup> .....	3	3	....	
C.E. 198 .....	1	1	1	
	18	18	19	

## Agricultural Engineering Courses

1. Farm Mechanics. Use of hand and power tools, sharpening, care, and selection of tools and shop supplies. Sheet metal work; cold metal; forge work; practical farm drawing; home farm shop; and shop safety. Three lectures, two labs. (5F, W) **Jarrett**

4. Dairy Mechanics. Basic equipment for modern dairy plants; its accessories and upkeep. Three lectures, one lab. (4F) **Daines**

10. Irrigation Practice. Primarily for agricultural students. Principles and practices of efficient use of water, water measurement, farm surveying. Three lectures, one lab. **Barker**

14. Farm Power for Agricultural Students. Principles, operation, care, and maintenance of internal combustion engines and electric motors. Two lectures, on lab. (3F, S) **Daines**

15. Farm Machinery for Agricultural Students. Principles of mechanics and materials applied to farm machinery. Operation, adjustment, and care of agricultural machines. Two lectures, one lab. (3W, S) **Daines**

101. Farm Buildings. Especially for agricultural students. Planning, estimating, layout, construction materials, painting, remodeling, wiring, plumbing, fencing, concrete and masonry as related to farm structures. Three lectures, two labs. (5S) **Jarrett**

102. Farm Power. Operation, care, and maintenance of tractors and farm engines. Diesel, L. P. G., 4-cycle and 2-cycle engines and electric motors. Three lectures, two labs. (5W, S) **Jarrett**

103. Farm Machinery. Selection, operation, maintenance, and repair of farm machinery, including materials of construction, mechanics, transmission of power, adjustment of tillage, planting, spraying, dusting, forage, and harvesting equipment, brazing cast iron, welding, hard facing, and use of the carbon arc torch. Three lectures, two labs. (5F) **Jarrett**

108. Engineering Aspects of Soil and Water Conservation. Extent and kinds of erosion, rate of water absorption, soil erodibility, vegetation and cultural practices. Erosion control structures, surveys for hydraulic designs for terraces; terrace outlets and soil saving dams. Tillage and farming methods, strip-cropping, erosion and alkali problems on irrigated land. Three lectures, one lab. (4W) **Daines**

109. Farm Utilities. Modern methods of heating, lighting, ventilating, water supply and farm sanitation, farm electrical systems and appliances. Three lectures, one lab. (4W) **Daines**

110. Irrigation Principles. Primarily for upper division students in agriculture and colleges other than Engineering. Water measurement, conveyance and application, consumptive use of water and water requirements, pumping, drainage, and soil-water relationships. Prerequisite: Math. 34. Two lectures, one lab. (3S) **Barker**

143. Irrigation Principles. For advanced engineering students. Soil, water, plant relationships; water requirements; efficiency of water use; flow of water in soil. Prerequisite: C.E. 142. Three lectures, one lab. (4F, S) **Hansen**

145. Design of Drainage Systems. Drainage design in relation to soil properties, location of drains, flow of water, properties of tile, drainage construction, salinity of soil, and quality of water. Prerequisite: C.E. 142. Three lectures, one lab. (4S) **Bishop**

148. Design of Farm Irrigation Systems. Application of engineering principles to the planning and design of farm irrigation systems. Includes open ditch and pipe line distribution systems for application of water by surface and sprinkling methods. Prerequisites: 143 and C.E. 142. (3S) **Bishop**

149. Irrigation Institutions. Laws governing acquisition, adjudication, and administration of water rights; state water codes, mutual companies, commercial companies, irrigation and drainage districts; federal legislation; project planning. (4F) **Milligan**

<sup>2</sup>See page 147.

**160. Management of Irrigation Systems.** Details of staff organization for irrigation systems. Distribution of water to irrigators; financing for construction and operation; Maintenance of canals, flumes, pipelines, dams, weirs, and other irrigation structures. (4W).

**Milligan**

**230. Special Problems in Agricultural Engineering.** Independent study of chosen problems in Agricultural Engineering. You are expected to develop your initiative in pursuing these problems. Standard, formal typewritten

reports required. Time and credit arranged. (F, W, S) **Staff**

**231, 232. Irrigation Science.** Advanced study in irrigation, including such topics as consumptive use of water, soil moisture, irrigation, erosion, infiltration, permeability, potential theory, well hydraulics, and other irrigation engineering principles and practices. (3W, S)

**Bishop, Milligan**

**298. Graduate Thesis.** Time and credit arranged. (F, W, S) **Staff**

## Department of Electrical Engineering

PROFESSORS *L. S. Cole*, HEAD, *C. Clark*, *B. L. Embry*; ASSOCIATE PROFESSORS *W. L. Jones*, *B. O. Watkins*; ASSISTANT PROFESSOR *D. G. Chadwick*; INSTRUCTOR *R. L. Heyborne*.

### Office in Mechanic Arts 200

The four-year program listed below leads to the degree of Bachelor of Science in Electrical Engineering, with emphasis in the field of general electronics.

The curriculum in Electrical Engineering is accredited by the Engineers' Council for Professional Development.

Laboratory work in small groups is an organized part of most courses, to provide physical confirmation of basic principles; familiarity with commonly used components, instruments and equipment; and to make possible closer relationships between teacher and student and among students.

If you plan to participate in the Advanced Military program, in Athletics, work part-time, or if you desire a broader and less intense program, a five-year course of study leading to a B.S. degree is also available.

### Electrical Engineering Curriculum

Freshman				
Course	F	W	S	
C.E. 1, 2 .....	1	1	....	
E.E. 26 .....	....	....	1	
Math. 35, 46, 97 .....	5	5	5	
E.D. 61, 62, 63 .....	3	3	3	
English 1, 2, 3 .....	3	3	3	
Chem. 10, 11 .....	5	5	....	
Elective <sup>1</sup> .....	....	....	5	
M.S., A.S., or P.E. ....	1	1	1	
	18	18	18	
Sophomore				
Course	F	W	S	
E.E. 79, 80, 81 .....	4	4	4	
Math. 98, 99, 110 .....	5	5	5	
Physics 20, 21, 22 .....	5	5	5	
Humanities <sup>2</sup> .....	3	3	3	
M.S., A.S., or P.E. ....	1	1	1	
	18	18	18	
Junior				
Course	F	W	S	
E.E. 124, 125, 126 .....	4	4	4	
E.E. 111, 112, 110 .....	3	3	4	
C.E. 101, 102, 103 .....	4	4	4	
Physics 120 .....	3	....	....	
M.E. 196 .....	....	3	....	
English 111 .....	....	....	3	
Humanities <sup>2</sup> .....	3	....	3	
E.E. 150 <sup>3</sup> .....	....	2	....	
	17	16	18	

Senior

Course	F	W	S
E.E. 139, 140, 141 .....	3	4	4
E.E. 107, 108, 160 .....	4	4	4
E.E. 175, 176, 177 .....	1	1	1
E.E. 151 or Elective <sup>4</sup> .....	2	2	2
E.E. Elective <sup>4</sup> .....	4	4	4
Elective <sup>1</sup> .....	3	...	...
Humanities <sup>2</sup> .....	3	3	3
	18	18	18

## Graduate Study

The graduate program in Electrical Engineering is basically general, covering circuits, waves and fields, with supporting mathematics and physics. Some specialization is available in the fields of radio propagation, servo-mechanisms, computer fundamentals, microwave measurements, and transistor circuitry.

A suggested course of study is listed below which will lead to the Master of Science degree. Modification may be made, depending on your preparation and objectives.

Extended programs of study, in cooperation with the Departments of Physics, Mathematics and Mechanical Engineering, may lead to the Engineer's and Doctor of Philosophy degrees in Electrical Engineering.

*Suggested Course of Study Leading to the Degree of Master of Science in Electrical Engineering.*

Course	F	W	S	Su
E.E. 211, 212 .....	4	4	...	...
E.E. 232, 233 .....	...	3	3	...
E.E. 222, 223 .....	...	3	3	...
E.E. 298 (thesis) .....	...	...	2	7
Math. 130, 131, 132 .....	3	3	3	...
Approved Elective <sup>1</sup> .....	3	...	3	3
	10	13	14	10

<sup>1</sup>Electives must be approved by Department Head.

<sup>2</sup>May be selected from the following: History, Economics, Government, Literature, Philosophy, Fine Arts, and Non-sectarian Religion.

<sup>3</sup>May be taken any quarter, omitting a humanities course.

<sup>4</sup>Selected in consultation with advisor.

## Electrical Engineering Courses

21. **Fundamentals of Electricity.** A service course for students in Industrial Arts, Automotive, Welding, etc. Basic principles of practical and applied electricity; DC and AC circuits; power; wire and wiring; motor, generator and transformer principles; batteries; meters. Prerequisite: Math 34 or equivalent. Three lectures. (3F, W, S) **Heyborne**

22. **Fundamentals of Electricity, Lab.** A laboratory course to accompany E.E. 21. Demonstrations and experiments on basic electric principles, circuits and equipment; problem sessions. One lab. (1F, W, S) **Heyborne**

26. **Electrical Engineering Orientation.** A preview of the preparation for, and the entrance into, the Electrical Engineering profession. Computation practice in E.E. problems, utilizing the slide rule and elementary mathematics. One lab. (S) **Staff**

79, 80, 81. **Introduction to Electrical Engineering.** Fundamentals of Electrical Engineering; basic physical and electrical energy concepts; definitions, terminology, electrical energy sources. Application of Ohm's law, Kirchhoff's laws, and network theorems to the solution of circuit problems. Non-linear circuit analysis. Introduction to magnetic and electric fields. Introduction to transient behavior. Fundamentals of alternating current; applications of complex quantities in AC circuits; application of network theorems in AC circuits. Single phase and multi-phase circuits; AC power and reactive volt-amperes. Elements of complex wave analysis. Alternating currents in non-linear circuits. Prerequisites: E.E. 79, concurrent registration in Math. 98, (calculus) and slide rule proficiency; E.E. 80, Math. 98, E.E. 79, and concurrent registration in Math. 99; E.E. 81, Math. 99 and E.E. 80. Three lectures, one lab. E.E. 79 (4F), E.E. 80 (4W), E.E. 81 (4S) **Watkins**

101. **Electronics.** A special course for senior or graduate science majors and non-electrical engineers. Fundamentals of electric and electronic circuits; applications to the electrical measurement of physical quantities. Prerequisites: Physics 21 and Elementary Calculus. Three lectures, one lab. (4F) **Jones**

104. **Fundamentals of Electrical Engineering—Circuits.** For non-electrical engineers. Principles and analysis of DC and AC circuits. Electric and magnetic fields and circuits. Prerequisite: Calculus and Physics 21. Two lectures, one lab. (3F) **Embry**



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**105. Fundamentals of Electrical Engineering—Machines.** A continuation of E.E. 104. Principles of DC and AC machines. Generation, transmission and utilization of electric power. Transformers and protective equipment. Two lectures, one lab. (3W) **Embry**

**106. Fundamentals of Electrical Engineering—Electronics.** A continuation of E.E. 104 and 105. Industrial electronic systems and devices. Electrical methods of measurements of physical quantities. Two lectures, one lab. (3S) **Embry**

**107. Electrical Machinery I.** An introductory course covering the basic principles of electrical machinery; magnetic circuits; DC machines; AC power circuits, polyphase circuits, power transmission and distribution. Prerequisite: E.E. 81. Three lectures, one lab. (4F) **Embry**

**108. Electrical Machinery II.** A continuation of E.E. 107 with special emphasis on AC machines. Transformers; single and polyphase systems and machines; control equipment. Prerequisite: E.E. 107. Three lectures, one lab. (4W) **Embry**

**110. Lines and Filters.** Principles and characteristics of transmission lines, networks, matching sections and filters. Prerequisite: E.E. 111. Three lectures, one lab. (4S) **Cole**

**111. Network Analysis I.** Basic network conventions and topology; formulation of network equations; solutions via differential equations, LaPlace transform and operational methods. Prerequisite: E.E. 81 and Math. 110. Three lectures. (3F) **Cole**

**112. Network Analysis II.** A continuation of E.E. 111; impedance and admittance functions; network functions, driving point and transfer immittances; steady state analysis from pole-zero configurations; amplifier networks. Prerequisite: E.E. 111. Three lectures. (3W) **Cole**

**120. Antennas.** Fundamentals of antennas, radiation and wave propagation; directional arrays; feed lines and matching and phasing networks; antenna and field strength measurements. Prerequisites: E.E. 110, 139. Three lectures, one lab. (4S) **Clark**

**124. Fundamentals of Electronics.** Analysis of the principles, characteristics and operation of electronic devices utilizing basic physical laws and concepts of modern physics. Includes study of thermionic emission, vacuum and gas tubes, photoelectricity, semi-conductors and transistors. Prerequisites: E.E. 81, Math 110; concurrent registration in Physics 120 is desirable. Three lectures, one lab. (4F) **Jones**

**125. Electronic Circuits.** Principles, analysis and design of tube and transistor voltage amplifiers; feedback principles and feedback amplifiers. Prerequisite: E.E. 124. Three lectures, one lab. (4W) **Cole**

**126. Electronic Circuits.** Principles, analysis and design of tube and transistor power amplifiers; RF power amplifiers and oscillators; modulation and detection systems. Prerequisite: E.E. 125. Three lectures, one lab. (4F) **Chadwick**

**129. Electroacoustics.** Fundamentals of architectural acoustics: Theory and principles of electro-mechanical transducers, including loudspeakers, microphones and vibration pickups; recording methods and equipment; measurement techniques in acoustic and electromechanical systems. Prerequisites: E.E. 111, 125. Three lectures, one lab. (4W) **Cole**

**131. Transient Analysis.** Elementary study of transient phenomena in linear systems; formulation of the circuit differential equations and their solutions; the LaPlace transform and operational methods are stressed; network analysis. Prerequisites: E.E. 110 and Math. 110. (3F) **Cole**

**139. Fundamentals of Electric Waves.** Introduction to vector analysis; elementary electromagnetic field theory; Maxwell's equations; radiation and wave guides. Prerequisites: E.E. 110 and Math. 110. (3F) **Clark**

**140. Pulse Techniques.** Principles and design of low pass and band pass amplifiers for pulse applications; pulse generators and pulse shaping circuits, including multi-vibrators and blocking oscillators. Prerequisites: E.E. 112, 125. Three lectures, one lab. (4W) **Clark**

**141. Microwaves.** Fundamental principles of microwaves, generators, cavity resonators; transmission lines, wave guides, parabolic and horn radiators; microwave propagation; measurements in the microwave region. Prerequisites: E.E. 139, 140. Three lectures, one lab. (4S) **Clark**

**150. Instruments and Measurements.** The principles and application of electrical and electronic instruments; methods and techniques of measurements. Prerequisite or concurrent registration in E.E. 124. One lecture, one lab. (2F) **Heyborne, Chadwick**

**151, 152, 153. E.E. Project Laboratory.** For seniors only. Individual engineering assignments involving design, development, construction and testing of various types and units of electronic and communications equipment. A formal engineering report is required on each project. Two labs. (2F, 2W, 2S) **Staff**

**160. Servomechanisms.** Introductory theory and analysis of linear closed-loop control systems. Study of servomechanism systems containing electronic, electro-magnetic and mechanical components. Prerequisites: E.E. 107, 108, 131. Three lectures, one lab. (4W) **Watkins**

**165. Analog Computers.** Application of analog methods to the solution of engineering problems; principles of integrators, multipliers, function generators; time and amplitude scale factors. Prerequisites: E.E. 111 and Math 110. One lecture, one lab. (2F, W, S) **Watkins**

**167. Digital Computers.** Arithmetic operations in digital computers; survey of storage, switching, and input-output devices in computers; data processing and programming fundamentals. Prerequisites: Calculus and E.E. 125 or 101 or equivalent. One lecture, one lab. (2F, W, S) **Jones**

**175, 176, 177. Electrical Engineering Seminar.** A weekly meeting of staff and senior E.E. majors. Reports and discussions on recent developments in electronics and communications. Each student prepares and presents technical papers on suitable topics. (1F, 1W, 1S) **Staff**

**180. Transistors.** An introduction to the theory, principles and characteristics of transistors. Fundamental applications of transistors; circuitry, analysis and design. For senior or graduate E.E. majors. Prerequisites: E.E. 139 and Physics 120. Three lectures, one lab. (4S) **Jones**

**200. Special Studies in Electrical Engineering.** Preparation of professional papers and reports, research, and special problems. Time and credit arranged. (F, W, S) **Staff**

**211, 212. Advanced Electronic Circuits.** Pulse techniques and recurrent electrical transients. Generator, trigger, multivibrator and similar circuit theory and design. Theory and design of high-speed pulse amplifiers. Wideband and bandpass amplifiers. Amplifier noise problems. Prerequisite or concurrent registration in E.E. 131 or equivalent. Three lectures, one lab. (4F, 4W) **Clark**

**222, 223. Network Synthesis.** The mathematical basis and design methods for two and four-terminal passive networks having physically realizable driving point immittances. Prerequisites: Math 254 and E.E. 131. (3W, 3S) **Jones**

**232, 233. Electromagnetic Waves and Fields.** Field theory and Maxwell's equations; wave equations and solutions applied to wave guides, transmission lines, antennas, resonators and other wave structures. Three lectures (3W, 3S) **Clark**

**251. Servomechanisms and Automatic Controls.** Basic theory and design of servo systems. Transient response and stability problems. Computer fundamentals. Prerequisite: E.E. 131 or equivalent. Three lectures, one lab. (4S) **Watkins**

**298. Graduate Thesis.** Time and credit arranged. (F, W, S) **Staff**

# Department of Mechanical Engineering

(Mechanical Engineering, Engineering Drawing, Chemical Engineering)

PROFESSORS *W. C. Fitch*, HEAD, *H. R. Kepner*; ASSOCIATE PROFESSORS *S. H. Daines*, *A. G. Loveless*, ASSISTANT TO DEAN OF ENGINEERING; ASSISTANT PROFESSORS *F. W. Kiefer*, *C. R. Wallis*; INSTRUCTORS *R. A. Nyman*, *A. B. Smith*.

## Office in Engineering 204

This department offers the Bachelor of Science Degree in Mechanical Engineering as well as the service courses in Engineering

Drawing. The first two years of a program in Chemical Engineering are administered by this department.

# Mechanical Engineering

Mechanical Engineering is principally the application of scientific knowledge to the design, production and operation of engineering machines of all types and the production of mechanical power from heat sources. Mechanical engineers find employment in the fields of general industry, aircraft, hydraulic machinery, steam equipment, power equipment, automotive equipment, agricultural machinery, air conditioning, space heating, internal combustion engines, ventilating, nuclear engineering, and heat power machinery.

## Mechanical Engineering Curriculum

Freshman				
Course	F	W	S	
C.E. 1, 2, 3	1	1	1	
E.D. 61, 62, 63	3	3	3	
Math 35 <sup>1</sup> , 46, 97	5	5	5	
Chem. 10, 11	5	5	5	
Elective	5	5	5	
English 1, 2, 3	3	3	3	
M.S., A.S., or P.E.	1	1	1	
	18	18	18	
Sophomore				
Course	F	W	S	
C.E. 84	4	4	4	
T.E. 150	4	4	4	
Math 98, 99, 110	5	5	5	
Phys. 20, 21, 22	5	5	5	
C.E. 101	4	4	4	
Humanities <sup>2</sup>	3	3	3	
M.S., A.S., or P.E.	1	1	1	
	18	18	18	
Junior				
Course	F	W	S	
C.E. 102, 103	4	4	4	
M.E. 196, 197, 198	3	3	3	
E.E. 104, 105, 106	3	3	3	
C.E. 140, 141, 142	3	3	3	
Humanities <sup>2</sup>	3	3	3	
M.E. 130	4	4	4	
M.E. 120	2	2	2	
Eng. III	3	3	3	
	16	19	18	
Senior				
Course	F	W	S	
M.E. 111, 112	3	4	4	
Phys. 120, 121, 130	3	3	3	

M.E. 121, 122, 123	2	2	2
M.E. 131, 132, 133	4	4	4
M.E. 140	3	3	3
M.E. 150	3	3	3
M.E. 160	5	5	5
C.E. 195	3	3	3
Humanities <sup>2</sup>	3	3	3
	18	19	17

## Mechanical Engineering Courses

- 111. Advanced Dynamics and Kinematics.** Kinematics of linkages, belts, gears, and cams. Design of machine elements subject to dynamic loadings. Two lectures, one lab. Prerequisite: C.E. 103. (3F) **Kepner**
- 112. Stresses in Machine Elements.** A study of stresses in machine parts; theories of failure; statically indeterminate stresses and deflections, thermal stresses, stress concentrations. Prerequisite: C.E. 103. Three lectures, one lab. (4W) **Kiefer**
- 120, 121, 122, 123. Mechanical Engineering Laboratory.** Mechanical engineering instruments, application of thermodynamics to engines, fans, and compressors; compressible fluid flow; heat transfer equipment, boilers, and turbines; fuels and combustion; heating, refrigeration and air conditioning equipment; cooling towers; automatic controls; automotive equipment, aeronautical equipment. Prerequisite: M.E. 197. (2S, 2F, 2W, 2S) **Staff**
- 130, 131, 132, 133. Machine Analysis and Design.** Analysis of loads and forces on machines, design of machine elements, design of complete machines, automatic controls. Prerequisite: C.E. 103. (4S, 4F, 4W, 4S) **Staff**
- 140. Heating and Air Conditioning.** Design and operation of heating and air conditioning systems. Prerequisite: M.E. 198. (4F) **Staff**
- 150. Power Plant Engineering.** Design and operation of power plants, combustion theory; economic design and operation. Prerequisite: M.E. 198. (4W) **Staff**
- 160. Aerodynamics.** Airfoils, stability and control of aircraft; aircraft power plants. Prerequisite: M.E. 198. **Staff**
- 176. Application of Thermodynamics.** For Aeronautics and Automotive majors. Applications of laws of thermodynamics to combustion engines, compressors, vapor cycles, and refrigeration. Prerequisites: Math 35, 44, Physics 19. Three lectures, one lab. (4W) **Daines**
- 196, 197, 198. Engineering Thermodynamics.** Properties of gases, gas processes, gas cycles, internal combustion engines, flow of gases, gas

<sup>1</sup>See footnote page 153.

<sup>2</sup>See footnote page 153.

mixtures, properties of liquids and vapors, refrigeration, heat transfer. Prerequisites: Physics 22 and Math 99. Two lectures, one lab. (3F, 3W, 3S) **Staff**

**199. Heat Transfer.** Fundamental laws of heat transfer by conduction, convection, and radiation. Application to engineering problems. Prerequisite: M.E. 198. (4F) **Staff**

## Engineering Drawing

Engineering Drawing offers service courses in drafting and blueprint reading to all departments of the University.

You may qualify for a minor in Engineering (Mechanical) Drawing on completion of 18 credits, including Descriptive Geometry.

## Engineering Drawing Courses

**59. Blueprint Reading and Industrial Drawing.** For those desiring only one quarter's work in drafting. Reading and interpretation of blueprints, lettering, use of instruments, and basic drafting practices. Two lectures, two labs. (3S) **Nyman**

**60. Elementary Drafting.** For Forestry students. Use of instruments, simple lettering, and drafting fundamentals. One lab. (1W) **Staff**

**61, 62. Engineering Drawing.** The use of drafting instruments, graphic solutions, applied geometry, lettering, shape and size description, sectioning, and standard elements and symbols. (Don't purchase instruments or supplies until after you have attended the first scheduled exercise.) (3F, W, S) **Staff**

**63. Descriptive Geometry.** Principal and auxiliary views, points, lines, and planes, developments, intersections and warped surfaces. Engineering problems relating to cut and fill, mining, geology, and industrial design, are selected. Prerequisites: E.D. 61 or L.A. 20. One lecture, two labs. (3F, S) **Staff**

**94. Working Drawings and Specifications.** An introduction to architectural drawing and specifications applied to building and construction problems. Scale drawings including plans, elevations, sections and construction details are completed with tracings and prints. Prerequisite: E.D. 62. (3W) **Staff**

**95. Machine Design.** Mechanisms of power and motion and the design of machine parts incorporating standard industrial methods. Prerequisite: E.D. 63. (3F) **Staff**

**120. Mechanical Drawing for Industrial Arts Teachers.** Preparation of course work and training of teachers to teach architectural, sheetmetal, machine, and electrical drawing, in junior and senior high school industrial arts program. Prerequisite: E.D. 62 or equivalent. (3F) **Loveless**

**194. Mechanical Perspective.** Practical problems in angular, parallel, and oblique perspective. Rendering finished drawings. Prerequisites: E.D. 62. (3S) **Loveless**

**195. Industrial Production Illustration.** Translation of working drawings into dimetric and trimetric projections, exploded views, and assemblies as a means of rendering industrial illustrations. Prerequisite: E.D. 95. Taught alternate years with E.D. 194. (3W) **Loveless**

**196. Aircraft Drawing.** Aircraft techniques, numbering systems, change methods, and technical specifications. Prerequisite: E.D. 63. (3S) **Staff**

## Chemical Engineering

The following is a suggested outline of courses for Freshmen and Sophomores desiring to major in Chemical Engineering. At the end of the Sophomore year you may transfer to an institution granting a degree in Chemical Engineering.

Freshman				
Course	F	W	S	
C.E. 1, 2, 65 .....	1	1	1	
Math. 35 <sup>1</sup> , 46, 97 .....	5	5	5	
E.D. 61, 62, 63 .....	3	3	3	
English 1, 2, 3 .....	3	3	3	
Chemistry 3, 4, 5 .....	5	5	5	
M.S., A.S. or P.E. ....	1	1	1	
	18	18	18	
Sophomore				
Course	F	W	S	
Math. 98, 99, 100 .....	5	5	3	
Physics 20, 21, 22 .....	5	5	5	
Chem. 121, 122, 115 .....	5	5	5	
Approved Electives .....	3	3	....	
Economics 51 .....	....	....	....	
M.S., A.S. or P.E. ....	1	1	1	
	19	19	19	

<sup>1</sup>If you are deficient in high school mathematics, Algebra B, you will have to register for Math 34, Introduction to College Algebra, Fall quarter. You will have an opportunity to make up mathematics deficiency during the Summer session between Freshman and Sophomore years.

# Department of Tool Engineering

PROFESSORS *F. Preator*, HEAD, *H. R. Kepner*; ASSISTANT PROFESSOR *R. D. Child*;  
INSTRUCTOR *R. A. Sullenberger*.

## Office in Mechanic Arts 101

The department offers a four-year curriculum that leads to the degree of Bachelor of Science in Tool Engineering. The demand for capable tool engineers is greater than the supply of personnel qualified to take over production responsibilities.

Tool Engineering is a branch of engineering devoted primarily to planning the processes of economic manufacture; the art and science of analyzing, planning, designing, construction, and production of the manufacturing facilities. The Tool Engineer works closely with research and development, product engineering, methods engineering, machine design, tool design, plant layout engineering, gage engineering, and manufacturing cost estimating.

The Tool Engineering laboratories, the heat treatment, inspection, and senior students' design room are all adequately equipped with modern facilities for teaching, for engineering experimentation and for student development in production tool engineering.

A joint program of cooperative training with Utah industries has been worked out for advanced students which permits registration for summer periods. Field trips to industrial plants are conducted each year for junior and senior students. Senior field trip transportation fee is \$30.

Student Chapter No. 2 of the American Society of Tool Engineers promotes the professional and social interests of Tool Engineering ma-

jors. Members of the teaching staff are members of the national society.

## Tool Engineering Curriculum

### Freshman

Course	F	W	S
C.E. 1, 2 .....	1	1	....
T.E. 50 .....	....	....	1
T.E. 56 .....	....	....	3
Math 35 <sup>1</sup> , 46, 97 .....	5	5	5
English 1, 2, 3 .....	3	3	3
E.D. 61, 62, 63 .....	3	3	3
Chem. 10, 11 .....	5	5	....
M.S., A.S. or P.E. ....	1	1	1
	18	18	16

### Sophomore

Course	F	W	S
Math 98, 99, 110 .....	5	5	5
Physics 20, 21, 22 .....	5	5	5
T.E. 52, 53 .....	3	3	....
T.E. 57, 58 .....	....	3	3
Humanities <sup>2</sup> .....	3	....	3
M.S., A.S. or P.E. ....	1	1	1
	17	17	17

### Junior

Course	F	W	S
T.E. 151, 152, 153 .....	4	4	4
T.E. 150 .....	....	....	4
C.E. 101, 102, 103 .....	4	4	4
E.E. 101, 104, 105 .....	4	3	3
E.D. 196 .....	....	4	....
Weld. 96 .....	3	....	....
Humanities .....	....	3	3
	15	18	18

### Senior

Course	F	W	S
T.E. 181, 182, 183 .....	5	5	3
T.E. 180 .....	....	....	3
C.E. 140, 144 .....	3	3	....
E.D. 111, 112 .....	3	4	....
T.E. 184, 158 .....	....	1	3
BA 100, I.E. 120 .....	3	....	3
English 111 .....	....	3	....
Humanities .....	3	3	6
	3	3	6
	17	19	18



## Tool Engineering Courses

**50. Orientation.** Lectures, films, and field trips to acquaint you with opportunities for the tool engineer in industry. (1S) **Staff**

**51. Machine Tool Operation.** Training in use of hand tools, and in bench work and tool sharpening, together with elementary training on drill press and engine lathe. Reading assignments on machine tool operations, and applications of mathematics to machine tool problems. Two lectures, two labs. (4W, S) **Child**

**52, 53. Production Processes.** Shaper, milling, and grinding operations as used in master tooling programs, and in the manufacturing production operations. (3F, W) **Staff**

**56. Machine Lab for Engineers.** Acquaints you with basic machine tool operations. Two lectures, one lab. (3S) **Staff**

**57. Quality Inspection and Control.** Theory and practice of precision control of the manufactured product. You learn the use of precision equipment, to read material specifications, and to maintain quality control during the production cycle. Prerequisite: Math. 44 or 46. (3W) **Preator**

**58. Manufacturing Processes.** Fundamentals of manufacturing processes; shows possibilities and limitations of these processes and their application to fabrication of industrial products. (3S) **Child**

**111. Advanced Dynamics and Kinematics.** Kinematics of linkages, belts, gears and cams. Design of machine elements subject to dynamic loadings. Two lectures, one lab. See M.E. 111. Prerequisite: C.E. 103. (3F) **Kepner**

**112. Stresses in Machine Elements.** A study of stresses in machine parts; theories of failure; statically indeterminate stresses and deflections; thermal stresses; stress concentration. See M.E. 112. Prerequisite: C.E. 103. Three lectures, one lab. (4W) **Staff**

**150. Engineering Metallurgy.** Physical properties, composition, constituents, and heat treatment of metals used in industry, including cast iron, wrought iron, plain carbon steel, alloy steels, brasses, bronzes, aluminum alloys, and magnesium alloys. Prerequisite:

<sup>1</sup>If you are deficient in high school mathematics you must register beginning with Math 34. You must make up your mathematics deficiency during summer school following your Freshman year.

<sup>2</sup>May be selected from the following: history, economics, government, literature, philosophy, fine arts, and non-sectarian religion.

Chemistry 10. Three lectures, one lab. (4F, W, S) **Preator**

**151. Tooling Operations.** Develops an understanding of the capacity and versatile usefulness in production operations of the fundamental machines and equipment used in the manufacturing operations. Prerequisite: T.E. 52 and 53. Two lectures, two labs. (4F, W) **Child**

**152. Production Planning.** Analysis of machining processes and organization of operational sequence. Tool planning procedures and routing for production control. Prerequisite: T.E. 151. Two lectures, two labs. (4W) **Child**

**153. Tooling Standards.** Equipment tooling standards, optical tooling, and specialized tooling adapted to the production processes. Two lectures, two labs. (4W) **Child**

**158. Manufacturing Analysis.** Economics of tooling operations; the productivity of machines, different tooling methods, fabrication techniques, breakdown of operations, tool maintenance, tool costs, and job estimating. (3S) **Staff**

**180. Time Study Methods.** The study of time and motion, and operational sequence and assembly as they effect the planning of productions. (3S) **Staff**

**181. Tool Design.** The study and design of production tools such as gages, jigs and fixtures. Includes tool design standards, tolerances, springs, cam layout, and techniques of preparing tooling for the production processes. Three lectures, two labs. (5F) **Sullenberger**

**182. Die Design.** Types of manufacturing operations and design problems for production tooling. Emphasizes plastic working of metals. Three lectures, two labs. (5W) **Preator**

**183. Plant Layout.** Study of the utilization of space, machines, and equipment for economical production in manufacturing operations. Laboratory consists of organizing and planning details for layout of production operations. Two lectures, one lab. (3S) **Sullenberger**

**184. Seminar.** A review of current technical literature dealing with the latest production methods. Oral and written reports presented for discussion. (1W, S) **Staff**

**185, 186. Cooperative in Plant Training.** A cooperative training course conducted by the University and industry to supplement your academic work with plant experience and to qualify you for industrial opportunities. Time arranged. (6F, W, S) **Staff**

# Department of Industrial and Technical Education

(Aeronautical Technology, Automotive Technology, Industrial Arts Education, Trade and Industrial Education, Welding Technology)

PROFESSOR *W. E. Mortimer*, HEAD; ASSOCIATE PROFESSORS *C. N. Merkle*, *O. Slauch*, *L. P. Summers*; ASSISTANT PROFESSORS *E. L. France*, *C. W. Hailes*, *I. E. Lee*, *D. H. Swenson*, *L. R. Willey*; INSTRUCTORS *L. M. Hill*, *C. Hurst*, *A. B. Kemp*, *S. W. Merrill*; SUPERINTENDENT OF PLANT OPERATIONS AND SPECIAL INSTRUCTOR, *H. M. Wadsworth*.

Office in Mechanic Arts 104

The Department of Industrial and Technical Education offers training programs in Aeronautical Technology, Automotive Technology, Industrial Arts Education, Trade and Industrial Education, Welding Technology. Beginning as a department of Mechanical Arts in 1888, it has developed and expanded its offerings to provide for the "liberal and practical education of the industrial classes" as outlined in the original charter for Land-Grant colleges and universities. USU has constantly strived to fulfill its obligation in this respect and to keep its training programs abreast of the times.

This department offers two Baccalaureate degree programs:

(I) *Programs for Industrial Technicians of University Grade.* Present-day industry requires the services of scientists, engineers, technicians, and skilled craftsmen. These programs are planned for the higher level industrial technicians where a four-year program leading to a Bachelor's degree is essential to meet the demands of industry. The training provided combines technical knowledge and manual skills with a broad general University education. The programs pre-

pare you as a technician for technical, supervisory, or managerial positions in modern industry, and serve to provide an excellent foundation for entrance into Civil Service industrial positions or for private business. Curricula in these programs are available with majors in Aeronautical, Automotive, and Welding Technology. They are described later under the sections carrying these headings.

(II) *Programs for Industrial Teacher Education.* These programs give professional training for teachers, supervisors, and administrators in Industrial Education positions. Courses are offered during the regular school year and Summer School. Completion of the undergraduate curricula leads to the degree of Bachelor of Science in Industrial Education with a major in Industrial Arts Education for junior and senior high school positions, and Trade and Industrial Education for junior college, vocational, and technical school positions. The curricula are described under the Industrial Education section.

## Terminal Program

*Vocational Technical Program. A*

third kind of program, of a non-degree nature, is also offered by the department. This is a terminal (two-year) program that prepares you as a technician for modern industry. Completion of any one of the two-year curricula, listed under the different sections, leads to a Certificate of Completion in the specific field. These programs are much briefer and more specialized than the degree programs.

This work is offered in close cooperation with the Utah State Department of Public Instruction, and with industry. Problems of training and placement of students are worked out jointly to provide the best training possible. Instruction covers the practices of industry with emphasis on latest methods, modern equipment, and live productive work.

The Vocational Technical Program offers many distinct advantages to students desiring terminal education. Upon completing this program you are not only well prepared with the skills of your trade to enter modern industry, but you are also prepared, through your association and activities on a university campus, to take your place in society. Entering industry from this training program, you have opportunities for further progress and advancement, as has been demonstrated by many industrial leaders. By returning to this institution for further training, as a qualified student you may apply most of the credit earned under this program toward a degree, and thus better prepare yourself for supervisory and managerial positions.

### Graduate Study

The Master of Science degree in Industrial Education is offered with majors in Industrial Arts Education or Trade and Industrial Ed-

ucation. All courses in the 100 series may be used for graduate credit by majors in Industrial Education and by majors in closely related departments except I. E. 112, 113, 121, 129, 141, 142, 143, 144, 145, 171, 172, 173, 174 and 184. Courses in the 200 series are intended strictly for graduate work. Registration in these courses requires approval of the major professor and the instructor concerned.

## Aeronautical Technology

This program offers instruction for thorough training of skilled airframe and powerplant mechanics and aeronautical technicians.

USU's Aeronautical Technology is fully certified with Air Agency, complying with Civil Aeronautics Administration regulations, and holds Certificate No. 1175 covering training of combined airframe and powerplant mechanics. Satisfactory completion of the two-year curriculum qualifies you to apply for CAA airframe and powerplant mechanic ratings. As a graduate in the four-year curriculum you are required to have successfully accomplished the written and practical CAA examinations for these ratings. This training prepares you for both airframe and powerplant maintenance, and manufacturing employment. The degree curriculum combines a thorough technical training in aeronautics with a general university education. Training is based upon the objective of scientifically and systematically developing you to a point where you can assume responsible positions in the industry.

Facilities include complete laboratories and modern equipment for instruction in powerplants, propellers and accessories, aircraft con-

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struction, and maintenance and repair, including hydraulic systems and instruments.

### Aeronautical Technology Curriculum

Freshman				
Course	F	W	S	
Aero. 5, 6, 7 .....	4	4	4	
Aero 5a, 6a, 7a .....	4	4	4	
Math 34, 35, 46 .....	3	5	5	
English 1, 2, 3 .....	3	3	3	
T. E. 56 .....	3	.....	.....	
Weld. 92 .....	.....	3	.....	
E. E. 21 .....	.....	.....	3	
M. S., A. S. or P. E. ....	1	1	1	
<b>Total</b> .....	<b>18</b>	<b>20</b>	<b>20</b>	

Sophomore				
Course	F	W	S	
Aero 8, 9, 10 .....	4	4	4	
Aero 8a, 9a, 10a .....	4	4	4	
E. D. 61, 62, 63 .....	3	3	3	
C. E. 2 .....	1	.....	.....	
Physics 17, 18, 19 .....	5	5	5	
A. S., M. S. or P. E. ....	1	1	1	
<b>Total</b> .....	<b>18</b>	<b>17</b>	<b>17</b>	

Junior				
Course	F	W	S	
Chem. 10, 11 .....	5	5	.....	
English 112 .....	.....	.....	3	
Aero. 100, 105, 134 .....	3	2	4	
Aero. 101, 126, 103 .....	4	3	3	
T.E. 150 .....	.....	.....	4	
I.E. 120 .....	3	.....	.....	
Approved Electives <sup>1</sup> .....	3	6	3	
<b>Total</b> .....	<b>18</b>	<b>16</b>	<b>17</b>	

Senior				
Course	F	W	S	
Aero. 102, 104, 132 .....	3	3	3	
Econ. 125 .....	3	.....	.....	
C.E. 176 .....	.....	4	.....	
T.E. 158 .....	.....	.....	3	
Aero. 131, 130, 37 .....	3	2	3	
E.D. 196 .....	.....	.....	3	
Speech 5 .....	3	.....	.....	
Approved Electives <sup>1</sup> .....	5	8	6	
<b>Total</b> .....	<b>17</b>	<b>17</b>	<b>18</b>	

Fall Quarter.

<sup>1</sup>Electives must be approved by department head. May include advanced military or air science.

### Two-Year Vocational Program

A Certificate of Completion for a two-year program in airframe and powerplant mechanics will be granted on satisfactory completion of the Civil Aeronautics Adm. written and practical examination in airframe and powerplant mechanic rating, and satisfactory completion of the Freshman and Sophomore curriculum listed above. If desired, Physics 17, 18, 19 may be replaced with Physics 6, Chemistry 10, and Welding 91 or 94. Application for this certificate and payment of fee must be made through the Registrar.

### Aeronautical Technology Courses

5, 5a. Composite Aircraft Structure. Design construction, repair, and maintenance of composite aircraft, including wood structures, fabric work and finishing, control systems, landing gear, engine mounts, and pertinent Civil Air Regulations. (4 lect., 4 lab. F) **Merrill**

6, 6a. All-metal Aircraft Structures. Design, construction, repair, and maintenance of all-metal aircraft, including layout, 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. (4 lect., 4 lab. W) **Merrill**

7, 7a. Aircraft Maintenance. The maintenance, repair, and alteration of modern aircraft and miscellaneous related equipment, including aircraft hydraulics, electrical equipment and installation, and general servicing of components; rigging, weight and balance computations, periodic inspections, recording of repairs and alterations, time and material cost estimates, material and equipment requirements. Pertinent Civil Air Regulations are studied. (4 lect., 4 lab. S) **Merrill**

8, 8a. Aircraft Powerplants. Introduction, operation, maintenance and repair of modern air cooled aircraft engines, including design, disassembly and reassembly procedures, special tools and their application to power sections, accessory sections, supercharger sections. Basic related material includes a study of specifications and tolerances, horsepower curves, MEP, BMEP, BHP, design factors, inspection methods, materials and processes, volumetric efficiency, compression ratios, oil and lubrication systems, and pertinent Civil Air Regulations (4 lect., 4 lab. F) **Hill**

**9, 9a. Aircraft Powerplant Accessories.** Operation, repair and maintenance of modern aircraft engine accessories, including design, fuel systems, carburetion and carburetors, fuel injection systems, magnetos, generators, and voltage control systems, batteries and starters, and fuel pumps. Application and compliance with pertinent Civil Air Regulations. Basic related material includes combustion and combustible mixtures, electricity and magnetism, induction systems and superchargers, fuels and lubricants. (4 lect., 4 lab. W) **Hill**

**10, 10a. Aircraft Powerplant Maintenance.** Training in alteration, maintenance and operation of aircraft powerplants, including periodic inspections, servicing, diagnosis of engine malfunctioning, and engine installation. Theory of operation and design characteristics of controllable, constant speed, hydromatic, electric and reversible propellers. Overhaul and maintenance of propellers. Pertinent Civil Air Regulations. (4 lect., 4 lab. S) **Hill**

**31 Civil Air Regulations, Radio and Airway Procedures.** Rules and regulations pertaining to operation of aircraft, radio, and airway procedures. (2F, 2W, 2S) **Staff**

**34. Navigation.** Maps, charts, and navigational problems. Required by the CAA for all pilot rating. (3F) **Merrill**

**37. Private Pilot Certificate.** Flight School Primary. Flight training to meet CAA requirements. Satisfactory completion of CAA tests required for certification. Credit arranged; limit three credits. (F, W, S) **Staff**

**100. Fundamentals of Turbo-Jet Propulsion.** History, development and general principles of jet propulsion. Thrust and performance, combustion systems, metallurgy, fuels, fuel controls, lubrication and ignition systems, aerodynamic problems, application. Prerequisite: Aero. 10. (3F) **Summers**

**101. Flight Engineering.** Principles underlying relationships between altitude, power output, airplane performance, and the use of engine power curves, take-off and climb charts, cruising charts and flight logs. Three lectures, one lab. (4F) **Summers**

**102. Advanced Turbo-Jet Propulsion and Gas Turbines.** Extension of fundamental theory, axial and centrifugal flow compressors, gas turbines, jet propulsion, turbo-prop engines. Prerequisite: Aero. 100. Two lectures, One lab. (3F) **Summers**

**103. Elementary Aircraft Design.** Basic constructional concepts relating to aircraft design. (3S) **Summers**

**104. Aircraft Design and Construction.** Design and manufacture of stressed skin aircraft. Correlation of design requirements with manufacturing practice. Pertinent Civil Aeronautics Administration Regulations covering design. Prerequisite: Aero. 103. (3W) **Summers**

**105. Aircraft Woods and Plastics.** Analysis of materials as applied to aircraft. Emphasis on investigation and development of methods involving design criteria. (2W) **Staff**

**126. Airline Maintenance and Fixed Base Operations.** Administrative problems of airline and airport management; unit organization; personnel problems; relationships with Civil Aeronautics Adm.; interline agreements, promotion and publicity. (3W) **Staff**

**130. Aeronautics Seminar.** Current topics in production methods, cost, design, supply and organization of interest to aeronautical technicians. (2F, 2W, 2S) **Staff**

**131. Time and Motion Study.** Techniques of time and motion study and their inter-relationship. Detailed discussion and practice with process charts and multiple-activity charts. Therblig check list, motion economy and stop-watch time study. Methods of application and personnel problems involved. (3F) **Staff**

**132. Airport Planning.** The airport and the community airway and airport traffic control. Airport types, fundamental requirements, planning and construction. Lighting, building and hangar design. Special problems and miscellaneous facilities. (3S) **Staff**

**134. Aircraft Electrical Systems and Equipment.** The more complex electrical systems used in larger aircraft. Prerequisite: E.E. 21, Aero. 10. Three lectures, one lab. (4S) **Summers**

**137. Commercial Pilot Certificate.** Flight training to meet CAA requirements. Satisfactory completion of CAA tests required for certification. Prerequisites: Private Pilot Certificate and Aero 34. Credit arranged; limit 10 credits. (F, W, S) **Staff**

## Automotive Technology

Training programs leading to a Bachelor of Science degree are offered in both Automotive and Diesel Technology. Two-year terminal programs are offered in these same areas and also in Auto Body Reconditioning. In addition, general



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service courses are provided for students in other departments or programs who desire to become familiar with various phases of automobile work. Courses are also conducted in Driver Education Teacher Training.

Facilities include a new building designed and built specifically for automotive and aircraft instruction. The laboratories contain the most modern servicing and testing equipment, and provide ideal conditions for study.

The course of study in Automotive or Diesel Technology prepares you to be a technician well trained to interpret the designs of engineers and direct the work of skilled craftsmen. This major also prepares you to become a shop foreman, shop superintendent, or with special preparation, a school instructor. Excellent background is provided for entrance into civil service, private business, and managerial positions with large companies.

*Service Courses*, open to any student, are: Auto 51, 52, 53, 54, 61, 62 and 162.

### Automotive Technology Curriculum

Freshman		F	W	S
Course				
Auto 1, 2, 3 .....		6	6	6
Math. 34 <sup>1</sup> , 35, 44 .....		3	5	3
English 1, 2, 3 .....		3	3	3
Weld 94, 91, 190 or 191 .....		3	3	3
C.E. 2, Auto 54 .....		...	1	3
M.S., A.S. or P.E. ....		1	1	1
		16	19	19

Sophomore		F	W	S
Course				
Auto 4, 5, 6 .....		6	6	6
Chem. 10, 11, 12 .....		5	5	5
E.D. 61, 62, 63 or 93 .....		3	3	3
E.E. 21 .....		3	...	...
T.E. 51 or 56 .....		...	3	...
Auto 61 .....		...	...	3
M.S., A.S. or P.E. ....		1	1	1
		18	18	18

Junior		F	W	S
Course				
Auto. 101, 102, 103 .....		3	3	3
Auto. 162 .....		...	...	3
Econ. 51 .....		5	...	...
Physics 17, 18, 19 .....		5	5	5
I.E. 113 .....		...	...	3
I.E. 120 or Psy. 155 .....		...	3	...
Electives, M.S., A.S. or P.E. ....		3	5	3
		16	16	17

Senior		F	W	S
Course				
Auto. 151, 152, 154 .....		3	3	3
P.H. 155 or Zool. 111 .....		...	3	...
Econ. 125 or BA 155 .....		...	...	3
English 112 .....		...	...	3
B.A. 109, 147, 148 .....		4	3	3
T.E. 150 .....		4	...	...
C.E. 176 .....		...	4	...
Electives, M.S., A.S. or P.E. ....		5	4	4
		16	17	16

### Diesel Technology Curriculum

Same as above, except substitute Auto 21, 22, 23, 122, and 123 for Auto 1, 2, 3, 102, and 103.

*Two-Year Vocational Technical Program.* A Certificate of Completion in Automotive Repair, Diesel and Hydraulic Mechanics, and Auto Body Reconditioning will be granted, upon application and payment of diploma fee, to students completing the Freshman and Sophomore years of the respective curricula.

### Auto Body Reconditioning — Two Year

Same as above except substitute Auto 52, 53, for Auto 2; Auto 12, 13, and 16 for Auto 4, 5, and 6; Auto 62 for Chem. 12.

### Automotive Technology Courses

Note: All courses include technical lectures and related shop experience. Theory, construction, operational characteristics, and recommended repair procedures are emphasized.

1. **Steering Correction.** Brakes, steering mechanisms, suspension systems, frames, balance, and alignment. (6F, W) **Wiley**
2. **Automotive Engines.** Covers modern automobile engines, including cooling and lubrication. (6F, W) **Lee**

3. **Driving Mechanisms.** Clutches, transmissions, U-joints, drive lines, and rear axle assemblies. (6S) **Hurst, Lee**

4. **Fuel Systems.** Fuel tanks, carburetors, fuel pumps, fuel lines and manifolds. Includes discussions on superchargers, governors, and fuel injection. (6F, W) **Slaugh**

5. **Auto Electrics.** Ignition, batteries, generating systems, and cranking motors. (6F, W) **Slaugh**

6. **Motor Tune-up.** Trouble diagnosis and testing procedures. Covers horns, lighting systems, and other electrical units along with engines and carburetion units. Prerequisites: Auto 2, 4, 5 (6S) **Slaugh**

12. **Fender Reconditioning.** Modern processes of straightening and priming fenders. (6F) **Wiley**

13. **Body Reconditioning.** Complete body rebuilding procedures. Prerequisite: Auto 12. (6W) **Wiley**

16. **Automotive Refinishing.** Covers proper application and finishing methods of lacquers, enamels, and special automotive finishes. Includes color theory and mixing. (6S) **Wiley**

21. **Heavy Duty Chassis.** Steering devices, suspension systems, brakes, frames, and alignment factors on trucks and tractors. (6S) **Hurst**

22. **Automotive Diesel Engines.** Four-stroke-cycle and two-stroke cycle Diesel engines used in trucks and tractors. (6W) **Hurst**

23. **Heavy-duty Drives.** Power transmission units used on trucks and tractors. (6F) **Hurst**

51. **Automobile Chassis.** A general course on brakes and steering units. Open to any student who wishes to learn minor service procedures. (3F) **Hurst**

52. **Automobile and Farm Power Plants.** Provides actual experience in many of the service operations on the engine and its accessories. Includes spark-ignition and Diesel engines. (3S) **Wiley**

53. **Automobile and Farm Engine Electricity.** Stresses service and repair procedures within the reach of the average driver. Covers battery and magneto ignition and includes the major electrical systems. (3S) **Slaugh**

54. **Service Techniques.** Theory and practice in service station and shop management procedures. Covers professional ethics, selling, records, minor repairs, and lubrication. (3W) **Lee**

61. **Body and Fender Repair.** Covers basic fender and body repair processes for insurance adjusters and those who desire to do their own work. (3W) **Wiley**

62. **Upholstering.** Covers modern automobile and furniture upholstering processes. Upholster your own units as you learn. (3) **Wiley**

101. **Frame, Suspension, and Steering Systems.** An advanced course in steering geometry and steering problems. Power brakes and power steering devices are included. Prerequisites: Auto 1, Math 34, 44. (3F) **Hurst**

102. **Internal Combustion Engines.** Manufacturing and design characteristics of different engines. Attention is given to precision reconditioning of cylinders, crankshafts, and other engine units. Balance and force problems are included. (3W) **Lee**

103. **Automatic Transmissions.** Includes modern automatic transmissions and torque converters, electric clutches, and hydraulic systems. (3W, S) **Hurst**

122. **Fuel Injection Systems.** Various types of Diesel and gasoline injection systems are included. Modern testing equipment is used. Prerequisites: Auto 22, Physics 19. (3W) **Hurst**

151. **Carburetion.** Combustion processes, heat cycles, and fuel characteristics are studied in connection with internal combustion engine carburetion problems. (3F) **Lee**

152. **Motors, Generators, and Magnetos.** An advanced course covering technical phases of these units. Laws of Physics are applied. Prerequisites: Auto 5 and preferably Physics 19. (3W) **Lee**

154. **Seminar and Special Problems.** A systematic review of automotive systems with discussions and reports on recent developments. Practice exercises in the engine testing laboratory. (3S) **Slaugh**

162. **Metal Refinishing.** Principles and practices in metal preparation and refinishing processes are discussed. Lacquer, enamel, novelty finishes, and special protective applications are included. Attention is given to paint mixing and color balance problems. (3F) **Wiley**

## Industrial Arts Education and Trade and Industrial Education

Curricula are offered for the professional training of teachers, supervisors, and administrative staff in Industrial Education. In addition, courses in woodwork are offered. Upon completing your undergraduate courses you receive a Bachelor of Science degree in Industrial Education with a major in Industrial Arts Education, or Trade and Industrial Education.

## Industrial Arts Education

The curriculum in Industrial Arts Education is designed to meet state certification requirements for the General Secondary and Industrial Arts Certificates, and is composed of courses in arts, sciences, education, technical and professional industrial arts, and basic shop skills.

## Industrial Arts Education Curriculum

Freshman			
Course	F	W	S
English 1, 2, 3 .....	3	3	3
Math. 34 <sup>1</sup> , 35, 44 .....	3	5	3
E.D. 61, 62 .....	3	3	—
I.E. 61, 62, 63 .....	3	3	3
I.E. 70 .....	—	—	3
Art 1 .....	3	—	—
Psy. 53 .....	—	—	5
M.S., A.S. or P.E. ....	1	1	1
	16	15	18

Sophomore			
Course	F	W	S
Econ. 51 .....	—	5	—
Geol. 31, 32, 33 .....	3	3	4
Bot. 1, Phys. 4 .....	—	5	—
T.E. 51, Soc. 70 .....	4	—	5
I.E. 40 .....	2	—	—
Speech 21 .....	—	—	3
E.E. 21 .....	—	3	—
E.E. 22 .....	—	1	—
Approved Elec. ....	2	—	3
M.S., A.S. or P.E. ....	1	1	1
	17	18	16

Junior			
Course	F	W	S
Art 5 .....	3	—	—
Psy. 100, 102 .....	3	3	—
Public Health 155 .....	—	—	4
I.E. 141 .....	—	—	3
I.E. 142, 143 .....	3	—	2
I.E. 144, Art 118 .....	2	3	—
Educ. 113, 114 .....	—	3	3
I. E. 101, 184 .....	—	1	2
Weld. 96 .....	—	3	—
Electives, <sup>2</sup> M.S. or A.S. ....	5	3	3
	16	16	17

<sup>1</sup>If you have completed high school Algebra B and make a satisfactory grade on the mathematics entrance examination you may omit Math 34 and begin with Math 35 in the Fall quarter.

<sup>2</sup>Electives must be approved by the department head.

Senior			
Course	F	W	S
I.E. 107, 112 .....	3	8	—
I.E. 129, 121, 123 .....	3	3	6
I.E. 145, 102 .....	3	3	—
I.E. 110 .....	—	3	—
E.D. 120 .....	3	—	—
Electives M.S. or A.S. ....	4	—	10
	16	17	16

## Trade and Industrial Education

The trade and industrial program is designed primarily for instructors and supervisors in Vocational Technical Education and/or Vocational Industrial programs. As a candidate for the degree of Bachelor of Science in Industrial Education you must show evidence of successful trade and teaching experience, together with the general education requirements necessary for state certification in your field. Observation and directed teaching in the major and minor subjects may be substituted for teaching experience. The trade and teaching experience must be approved by a committee consisting of the department heads concerned.

## Trade and Industrial Education Curriculum

Freshman			
Course	F	W	S
Trade Training .....	6	6	6
English 1, 2, 3 .....	3	3	3
Math. 34, I.E. 6 .....	3	—	3
Engr. Dr. 61, 62, 63 .....	3	3	3
Art 1 .....	—	3	—
A.S., M.S., or P.E. ....	1	1	1
	16	16	16
Sophomore			
Course	F	W	S
Trade Training .....	6	6	6
Geol. 31, 32, 33 .....	3	3	4
Bot. 1, Physio. 4 .....	—	5	5
Psy. 53 .....	5	—	—
Approved Electives <sup>1</sup> .....	2	2	2
A.S., M.S., or P.E. ....	1	1	1
	17	17	18

<sup>1</sup>If a high school teaching certificate is desired, Education 114 and Public Health 155 must be included among the electives.

## Junior

Course	F	W	S
English 58 .....	3	---	---
Speech 21 .....	---	---	3
Econ. 51 .....	5	---	---
Psy. 100, 102, Soc. 70 .....	3	3	5
Adv. Trade or Tech. ....	5	5	3
I.E. 101, Ed. 113 .....	---	1	3
I.E. 118, 120 .....	---	3	3
Electives .....	---	5	---
	16	17	17

## Senior

Course	F	W	S
I.E. 107, 110 .....	3	3	---
I.E. 129, 121 .....	3	3	---
I.E. 112 .....	---	8	---
I.E. 102 .....	---	3	---
English 112 .....	---	---	3
Econ. 125 .....	3	---	---
Adv. Trade or Tech. ....	3	---	6
Electives .....	4	---	7
	16	17	16

## Industrial Arts Education and Trade and Industrial Education Courses

**6. Applied Shop Mathematics.** Simple mathematical formulas are used in solving problems in mechanical work. These include speed ratios, steel square, micrometer reading, and area and volume problems. Prerequisite: high school algebra and geometry. (3S) Swenson

**13. Driver Training.** For persons who desire to learn to drive an automobile correctly and safely. Traffic rules and regulations essential to sound driving; physical qualifications and tests of drivers; general mechanics, operation, and servicing of automobile; highway safety engineering; and actual supervised training in dual-control cars. Two lectures; lab arranged. (2F, S) Willey

**30. Building Maintenance.** Discussion of materials used in maintaining modern school buildings and their proper use. Required of all persons doing part-time custodial work on campus. Two lectures; lab arranged. (3F, W, S) Wadsworth

**40. Sheet Metal.** 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, soldering, seaming, riveting, and wiring. Two three-hour labs. (2F) Hailes

**61. Fundamentals of Woodwork.** Study and practice in the use and care of hand tools, including the sharpening of tools, and a study of the fundamental hand tool processes. An introduction to the use of common woodworking machines. Practice in wood construction is provided through the building of projects. Three labs. (3F) Swenson

**62. Machine Woodwork.** A study of safety measures, use and care of all the common woodworking machines, including the sharpening of machine cutters and other machine maintenance problems. A study of woods and various other materials related to wood construction. Practical experience is provided through student-constructed projects. Prerequisite: I.E. 61. Three labs. (3W) Swenson

**63. Advanced Woodwork.** The design and construction of furniture and other advanced projects. Provides additional experience and practice in both hand tool and machine processes for students who have completed I.E. 62 or who have had considerable woodworking experience. Problems related to furniture and other fine wood construction are made a part of the course through assigned reading, lecture and class discussion. Prerequisite: I.E. 62. Three labs. (3S) Swenson

**68. Practical Electric Wiring.** For students in building construction courses. Covers the national electrical code and local codes in Utah communities. Includes choice of materials, design of circuits and inspection for electrical heat, light and power installation in homes and small public buildings. Two lectures, one lab. (3W) Swenson

**70. Wood Finishing.** Fine wood finishing, such as natural finished, French polishing, hand polishing, stains, paints, enamels, gun work, interior and exterior wood finishes, plaster paints, brick stains, and stucco paints. You are required to practice in each type of finishing. Two lectures, three one-hour labs. (3F, W, S) Staff

**73. Materials of Industry.** Wood and wood products, commercial veneered panels, roof coverings, wall boards, insulating materials, siding, composition panelings, glass products and other non-metal materials used in building trades. (3W) Merkley, Mortimer

**74. Woodwork for Everyone.** Open to all, both men and women, who have a desire to work with wood. Instruction is given in the fundamentals of woodwork and includes training in the use of both hand tools and woodworking machines. Projects are selected and built by students; a wide latitude in the selection of projects is afforded. Emphasis is given to wood turning. Instruction is also given in furniture repair and in the basic principles of wood finishing and re-finishing. (2 to 5F, W, S) Staff

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**101. Observations in Student Teaching.** Serves as a preliminary to the regular student teaching in Industrial Education. You are assigned to various schools within the area to observe teaching in Industrial Arts or Trade and Industrial Education. (1F, W, S)

**Mortimer, Hailes**

**102. Instructional Aids.** Instruction in the purpose, types, sources, preparation and proper use of audio and visual aids, including samples, models, charts, graphs, slides, still film, movie film, sound film, and other aids suitable for classroom and auditorium use. Prerequisites: I.E. 107, 129. (3W)

**Mortimer**

**104. Occupational Analysis.** Principles and practice in analyzing occupations to determine teaching content. You complete an analysis of one unit for a trade or occupation. (3F, W, S)

**Mortimer**

**107. Principles and Objectives of Industrial Education.** Philosophy and purposes of Industrial Education. Study and compare general principles and objectives of Industrial Arts Education and Trade and Industrial Education with those of other educational programs. (3F)

**Mortimer**

**110. Shop Organization and Management.** Teaches you to organize and manage an Industrial Education Shop of the unit, general, or multiple activity type. You 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. Prerequisites: I.E. 107, 129. (3W)

**Hailes**

**111. The General Shop.** Comprehensive study of the types of "General Shop," its advantages and applications; content and organization of subject matter; methods of teaching and shop plans. General shop projects, shop plans and new trends in content and equipment are given special consideration. Prerequisite: I.E. 107. (3F, W, S)

**Mortimer, Hailes**

**112. Student Teaching in Industrial Education.** You observe and teach in Industrial Arts shops throughout the state. Under close supervision, you do practice teaching in various Industrial Arts courses recommended by the state in junior and senior high schools. (8W)

**Mortimer, Hailes**

**113. Driver Education and Traffic Safety.** To acquaint prospective teachers and others with available instructional materials for driver education and the latest methods of presenting these materials in the classroom and on the road. Supervised practice is arranged for you. (3F, S)

**Willey**

**118. Industrial Safety Education.** A practical course for technical workers, supervisors, and foremen in fundamentals of plant planning and operation for accident prevention. Special consideration is given to planning safety programs to meet needs of particular situations as they are experienced by class members. (3F, W, S)

**Staff**

**120. Personnel Relations.** Training for leadership in industry as foremen, supervisors, and directors. Problems in organizing, supervising, training, and directing personnel. Directed conferences based on student experiences and directed studies in leadership problems and principles. (3F, S)

**Staff**

**121. Methods in Industrial Education.** Latest techniques of teaching applied to individual and group instruction in Industrial Education. You have opportunity to use these different methods in presenting lessons before the class. Prerequisite: I.E. 107, 129. (3W)

**Mortimer**

**123. Curriculum Problems in Industrial Arts.** Teaches prospective Industrial Arts instructors the application of skills and knowledge acquired in basic shop courses. You construct projects suited to the work recommended by the State Department of Education. You prepare lesson plans and teaching aids that supplement and aid teachers in carrying out the program. Prerequisite: I.E. 129 and basic shop courses in Wood, Drawing, Metal, Electricity, and Crafts. Three lectures, three three-hour labs. (6S)

**Mortimer, Hailes**

**124. History of Industrial Education.** Historical developments of manual and industrial education from the early leaders to the present. Emphasis is given to the influence that various leaders and movements in both Europe and America, have had upon present-day objectives of industrial arts and vocational industrial education. (3F)

**Mortimer**

**129. Organization and Development of Instruction Materials.** Selection and arrangement of teaching materials to be used in industrial arts and trade and industrial shop work. (3F)

**Mortimer**

**141. Art Metalwork.** Laboratory work in embossing, sinking, engraving, etching, and metal spinning operations. Work is done in copper, brass, and aluminum on projects designed for utility and artistic merit. Prerequisites: Art 5, Machine Tool Technology. Three three-hour labs. (3S)

**Hailes**

**142. Plastics.** Acquaints you with the new and important group of plastic materials now produced and the fundamental operations used in working these materials. You complete projects in hand and machine work. Emphasis is given to the place of plastics in modern industrial arts programs. Three three-hour labs. (3F)

**Hailes**



**143. Recreational Crafts.** Especially for students majoring in recreational leadership. Consists of: (1) planning and organizing craft work as part of community recreational programs, (2) laboratory work in crafts, such as wood, leather, plastics, metals, and others. Two three-hour labs. (2S) **Hailes**

**144. Foundry Principles and Practices.** Principles and practices of basic foundry work. Castings are made using common non-ferrous metals, such as aluminum, copper, brass, and bronze. Two three-hour labs. (2F) **Hailes**

**145. Industrial Arts Applied Electricity.** Provides the prospective teacher with an understanding of how the basic principles and applications of electricity in the home and in industry should be prepared for the industrial arts program of secondary schools. Prerequisite: E.E. 21. One lecture, two three-hour labs. (3F) **Mortimer**

**I.E. 150. Related Technical Training in Vocational Education.** A course provided for students enrolling in industry and factory schools conducted on the university level, wherein instructors, course content, and facilities have been approved by a committee functioning through the Industrial Education Department. This course may be repeated for a maximum of nine quarter hours credit, to be acquired at a rate not to exceed one and a half quarter hour credits per 40 clock-hour week. You should not expect to acquire more than three credits in this course in any one calendar year except where teacher training courses are of longer duration. Regular university fees must be paid, and registration procedures followed. Time and credit arranged. **Staff**

**164. Conference Leading.** Principles and practice in conference leading applied to methods used in industry. Emphasis given to preparation, use and evaluation of this method as it affects industrial education programs. (3F, W, S) **Staff**

**167. Special Problems in Industrial Education.** For qualified students majoring in Industrial Education who wish to do specialized work not covered by other courses. Time and credit arranged. (F,W,S) **Staff**

**171, 172, 173. Cabinet Work.** Design and construction of furniture and cabinets. Emphasis is given to planning cabinets for modern homes and buildings and to organization of the work for efficient production. A study of woods best suited to furniture and cabinet construction. Prerequisite: I.E. 63. (3F, 3W, 3S) **Merkley, Swenson**

**174. Art Woodwork.** Study and application of decorative means employed for artistic appeal in wood. Turning, veneering, inlaying, finishing, and other techniques are included. Students also study and use the woods and tools

best adapted to the work. Prerequisite: I.E. 63. Two three-hour labs, one lecture. (3F, S)

**Mortimer, Merkley**

**180. Industrial Arts for Elementary Schools.** Objectives and theory of Industrial Arts in the elementary school. Suitable instructional content will be presented for each grade level and methods of teaching and organizing instructional materials will be carefully considered. Instruction is given on the use of tools and materials in the shop where projects suitable for the elementary school will be constructed from modern industrial materials. Two lectures, one lab. (3W) **Staff**

**184. Ornamental Iron Work.** Designing and making of iron furnishings in harmony with modern design and techniques for both interior and exterior use. Wrought iron furniture, railings, etc., will be planned and constructed. Prerequisite: Basic course in Welding. Two labs. (2S) **Staff**

**207. Philosophy of Vocational Education and the Practical Arts.** Designed to enrich and expand your understanding of the nature and purposes of vocational education and practical arts, their relationships and differences, and the place each phase of the work should have in a public school program. Prerequisite: I.E. 107 or equivalent. (3F, W, S) **Staff**

**209. Course of Study Building in Industrial Education.** Teaches you to prepare and use a course of study consisting of the outline, analysis, progress charts, lesson plans, instruction sheets, references, tests, and instructional schedule. You complete this work for one unit of instruction. Prerequisite: I.E. 129. Three lectures. (3F, W, S) **Mortimer**

**251. Administration and Supervision of Industrial Education.** The laws, regulations, and policies affecting Industrial Education programs; organization, supervision, and management necessary for successful operation of these programs. (3F, W, S) **Staff**

**254. Measurement in Industrial Education.** Construction and use of the various types of tests and rating scales used in Industrial Education. Emphasizes measurable factors in industrial education and the types of tests best suited to this field. The elements of statistical methods necessary for intelligent use of the tests. Prerequisite: Psychology 102. (3F, W, S) **Mortimer**

**255. Techniques in Writing Instruction Sheets.** Principles underlying development of instruction sheets for use in industrial arts and trade and industrial education programs. Prerequisite: I.E. 129. (3F, W, S) **Staff**

**259. Planning and Equipping School Shops.** Principles and practice in planning and equipping modern industrial arts laboratories and trade and industrial shops. For adminis-

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trators, supervisors, directors, architects, and others interested in planning new or remodeling existing facilities. You study basic plans of laboratory or shop design and arrangements of equipment, and apply these principles to solution of your particular problems. Prerequisite: I.E. 110. (3F, W, S) **Staff**

**261. Problems of Adult Education.** Development of Adult Education movements; learning abilities, educational interests, needs of adults, organization of evening school programs, apprenticeship training, and related instructions for trade programs. (3F, W, S) **Staff**

**267. Reading and Conference.** Provides for study in advanced and specialized problems in Industrial Education. Problems are selected with approval of the department head; investigation is carried on under direction of the major professor. Time and credit arranged. (F, W, S) **Mortimer**

**270. Seminar in Industrial Education.** Gives opportunity for investigation and reporting of individual problems. (1 to 2F, W, S) **Mortimer**

**271. Research and Thesis Writing.** Provides for individual work in thesis writing in industrial education. Time and credit arranged. (F, W, S) **Mortimer**

**290, 291, 292. Advanced Studies Under Plan "B."** Special library and seminar problems or studies designed to meet requirements for reports under plan "B." (See School of Graduate Studies.) (2 to 3F, W, S) **Mortimer**

## Welding Technology

This program provides instruction in all phases of electric and oxy-acetylene welding, with a curriculum leading to a Bachelor of Science degree. In addition, general service courses are offered for students in other departments who desire to become familiar with basic welding as it applies to their fields of endeavor.

### Welding Technology Curriculum

Freshman		F	W	S
Course				
Weld. 41, 42, 43 .....		5	5	5
English 1, 2, 3 .....		3	3	3
E.D. 61, 62, 63 .....		3	3	3
Math 34, 35, 44 .....		3	5	3
T.E. 56 .....		...	...	3
M.S., A.S., or P.E. ....		1	1	1
		15	17	18

### Sophomore

Course	F	W	S
Weld. 44, 45, 46 .....	5	5	5
Physics 17, 18, 19 .....	5	5	5
T.E. 57, 58 .....	...	2	2
E.E. 21 .....	3	...	...
Humanities <sup>1</sup> .....	3	3	3
M.S., A.S., or P.E. ....	1	1	1
	17	16	16

### Junior

Course	F	W	S
Weld. 153, 154, 155 .....	3	3	3
Chem. 10, 11 .....	5	5	...
English 111, or 112 .....	...	...	3
T.E. 52, 150 .....	4	4	...
I.E. 120 .....	...	...	3
Humanities <sup>1</sup> .....	3	3	3
Electives .....	3	3	3
	18	18	15

### Senior

Course	F	W	S
Weld. 161, 162, 163 .....	3	3	3
Weld. 193 .....	...	...	2
C.E. 130 .....	3	...	...
I.E. 118 .....	...	3	...
B.A. 100, 147, 148 .....	4	3	3
Econ. 125, 126 .....	3	3	...
Humanities <sup>1</sup> .....	3	5	9
	16	17	17

*Two-Year Vocational Technical Program.* A Certificate of Completion will be granted upon application and payment of diploma fee when you complete the Freshman and Sophomore years of the Welding Technology curriculum.

## Welding Technology Courses

In each of the following courses, Welding techniques in various positions are practiced. American Welding Society (A.W.S.) tests are made on samples welded in different positions. Safety precautions and proper use of equipment are emphasized.

<sup>1</sup>Humanities may be selected from the following: History, Economics, Government, Literature, Sociology, Philosophy, Psychology, Religion (that which is acceptable by the University for college credit), and Fine Arts.

**41, 42, 43. Acetylene Welding.** Principles and practices in all phases of oxy-acetylene welding, heating, and cutting operations. Designed primarily for those who desire to obtain the necessary knowledge and skill for welding in industry. (5F, 5W, 5S) **France**

**44, 45, 46. Electric Arc Welding.** Principles and practices in all phases of Electric Arc Welding. Gives you an opportunity to reach a high degree of efficiency in the welding of mild steel. Attention is given to hard surfacing, semi-automatic, and submerged arc welding. (5F, 5W, 5S) **Kemp**

**91. Acetylene Welding.** Principles and practice in fundamentals of oxy-acetylene welding and cutting. A general service course open to all university students. Two lectures, two two-hour labs. (3F, W, S) **France**

**92. Aero Welding.** A basic course providing an introduction to the fundamental principles of oxy-acetylene welding and cutting as it applies to aircraft production and repair as set forth by Civil Air Regulations. Sufficient laboratory practice is provided to prepare you for C.A.A. Tests in aircraft welding. Two lectures, two two-hour labs. (3W) **France**

**94. Electric Arc Welding.** The basic course providing for principles and practices in the latest types of electric arc welding equipment. Emphasizes safety measures and methods used in the welding of mild steel in the flat position. A general service course open to all university students. (3F, W, S) **Kemp**

**96. Engineers Welding.** A survey and analysis of modern welding processes and procedures used in engineering design. The units include: welding metallurgy, welding processes, their characteristics and applications, inspection and testing, problems of commercial welding, filler materials, stress and distortion, and production economy. Two lectures, two two-hour labs. (3S) **France**

**97. Fundamentals of Welding.** A basic service course designed to acquaint you with the more common welding processes for metals joining. Units include fusion welding of mild steel sheet and plate with the oxy-acetylene and arc processes, brazing of ferrous and non-ferrous metals, silver soldering and oxy-acetylene cutting. Two lectures, two two-hour labs. (3W) **France**

**153, 154, 155. Advanced Acetylene Welding.** A detailed survey and analysis of the oxy-acetylene welding processes and procedures, together with sufficient laboratory practice to qualify you for welding code tests. Special cutting problems, inspection and management, and welding metallurgy. (3F, 3W, 3S) **France**

**161, 162, 163. Advanced Electric Welding.** Designed for welding majors. Consideration is given to inspection, weldability of metals, welding metallurgy, design and cost estimating. Laboratory practice includes inert gas welding, manual arc welding, submerged arc welding, and resistance welding. Prerequisite: Welding 94. (3F, 3W, 3S) **Kemp**

**190. Advanced Acetylene Welding.** Designed to meet the need of those desiring more information and practice in welding than is given in Welding 91. Prerequisite: Welding 91. (3S) **France**

**191. Advanced Electric Arc Welding.** A continuation of Welding 94. Teaches methods of vertical and overhead welding and special problems such as hard surfacing and the welding of cast iron. Special problems in research are included. Prerequisite: Welding 94. (3F, W, S) **Kemp**

**193. Welding Seminar.** Current topics in production methods, cost, design, and manufacture of welded products used in modern industry. (2S) **Kemp**

*College teaching should be distinguished by its quality rather than its volume.*

# Engineering Experiment Station

Vaughn E. Hansen, Director

Office in Engineering 202

The Engineering Experiment Station of Utah State University was established December 2, 1918 by act of the Board of Trustees. The director has supervisory responsibility to the Dean of Engineering for all research conducted by the various departments and staff members of the College of Engineering except that which they do for the Agricultural Experiment Station.

The Engineering Experiment Station is a major part of the College of Engineering. It has the broad purpose of furthering engineering sciences, engineering arts, and engineering education, especially as these relate to improving the welfare of Utahns, through development of agriculture, industry, natural resources, and in development of methods of more effective engineering teaching.

Important public service projects being pursued by the Station include developments in control systems, machinery, fuel and power, computation methods, electrical power applications, electronic designs, and water supply, control and conveyance.

The Station conducts basic and applied research in civil, electrical, mechanical, tool and agricultural engineering. Emphasis is placed upon development of water resources and methods of water control and utilization. Typical subjects currently under study include highways, materials, hydraulics, servo-mechanisms, and radio propagation.

Staff members of the Civil, Electrical, Mechanical, Tool Engineering departments and the Industrial and technical Education department, constitute the staff of the Engineering Experiment Station. The Station cooperates closely with the Utah Scientific Research Foundation. All laboratories of the College of Engineering and Technology as well as the facilities of the Utah Scientific Research Foundation are available to assist in the execution of the projects of the Station.

Results of these studies are published in research bulletins, engineering reports and papers, or are otherwise made available to those interested.

*Leadership through sacrifice accomplishes more than leadership through power.*



*College of Forest, Range and  
Wildlife Management*



**Lewis M. Turner, Dean**



## College of Forest, Range and Wildlife Management

### *Department of Forest Management, 177*

General Forestry, 177

Timber Management, 177

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Game Management, 184

Fishery Management, 184

### *Degrees Offered:*

Bachelor of Science

Master of Forestry

Master of Science

Doctor of Philosophy

# College of Forest, Range and Wildlife Management

Lewis M. Turner, Dean  
Office in Forestry 102

Increasing activity in the fields of forest management, range management, wildlife management, soil conservation, watershed management, and forest recreation, and the unquestioned need for their correlation in long-range wild land management, have created excellent opportunities for men who wish to work in these fields. The purpose of this College is to provide training in the conservation and management of wild lands and their resources so that they may be of continuing benefit for present and future generations of citizens.

*The favorable geographical location* of this College of Forest, Range, and Wildlife Management provides exceptional facilities for field experience and affords excellent opportunities for effective training in managing wild lands and their resources. Forest and range lands in Utah comprise more than 90 percent of the total state area. The Cache National Forest, within two miles of the school; the Bear River Migratory Bird Refuge within forty miles, and vast areas of range lands provide forest, range, soil conservation, and wildlife problems, and offer unlimited study projects and opportunities for demonstration. Herds of elk and deer are studied close to the campus during the winter. Primitive areas, Yellowstone Park, and other national parks are within one day's driving distance.

A regional office of the U. S.

Forest Service is in Ogden, 45 miles distant, and offices of the U. S. Fish and Wildlife Service and the Utah Department of Fish and Game, the U. S. Bureau of Land Management, U. S. Bureau of Reclamation, U. S. Indian Service, and U. S. Soil Conservation Service are in Salt Lake, 85 miles from Logan.

*The curricula of this College* prepare men for positions with federal or state agencies and for private work in (1) forest management, (2) range management, and (3) wildlife management. As a forest management student you may choose between three options: one designed to train for general forestry work, as with the public land managing agencies, one more strictly for timber management, and one in forest recreation management. As a range management student you may specialize in a general range management, forest-range management, or watershed management. As a wildlife management student you may select a curriculum to train either for game management or fishery management.

*Entrance Requirements.* Normally, graduation from an accredited high school is prerequisite to entrance to the College. Veterans and certain others, not high school graduates, may be admitted if they make acceptable scores on certain College entrance tests.

You will make more satisfactory progress if you have had two years

of high school algebra, geometry, and also chemistry, physics, typing, and biology. Four years of English are also desirable. It is important that you have an interest in and an aptitude for studying natural science.

*Summer Camp.* Successful completion of field instruction at the College-operated summer camp is required of students who plan to major in any curriculum in the Forest Management Department or the Forest-Range Management option offered by the Range Management Department. Any properly qualified student in the College may attend if he desires and makes suitable arrangements prior to the camp period. The camp opens soon (usually the first Monday) after the end of the spring quarter, and continues for seven weeks, unless the camp is released for fire-fighting in which instance the camp lasts eight weeks. Nine credits are allowed for the complete program. In addition to the regular summer school fees, a \$5 fee is charged for each of the four courses. Board is provided on a cost basis; lodging is without cost. Before attending camp you should be inoculated against Rocky Mountain spotted fever.

As a transfer to this College from another school you should note that (a) completion of the camp program is required in the above-named courses of study; (b) it is prerequisite to professional forest management course work in the junior year; and (c) in addition to having completed two years of college work, the pattern of courses taken at another college should essentially duplicate those required of freshmen and sophomores in this college.

*Field trips* are planned each year as part of the regular class instruction. Besides short trips scheduled

for individual courses, each department conducts an extensive field-problems trip in the spring quarter of the junior year, or the fall quarter of the senior year; this trip is required of all students. The trip for range management juniors is taken just before the fall quarter starts. The trip for forest management and wildlife management juniors is taken during a period of ten days or two weeks just prior to the end of the spring quarter. A fee of about \$40.00 is charged each student to defray the general expenses of the trip.

*Loan Funds.* Two sources of funds are available on a loan basis to worthy, deserving upper-division students in the College of Forest, Range, and Wildlife Management. These are the W. B. Rice Memorial Loan Fund and the Bureau of Land Management Fund. Loans are made for short periods. The funds are administered by a faculty committee and application should be made to the Dean's office.

*Graduation Requirements.* The following general requirements must be met for graduation from the College of Forest, Range, and Wildlife Management: (1) One hundred and ninety-two quarter credits, exclusive of basic Military Science, physical education, and forestry summer camp. (2) All courses prescribed under the study program of your chosen field. (3) Three hours of social science, in addition to general economics. (4) Proficiency in written and spoken English. If you are deficient in this you are required to pass certain supplementary or corrective courses in addition to regular requirements. (5) At least one summer of department-approved practical and qualifying work experience. In certain instances summer camp attendance may fulfill this requirement.

# Department of Forest Management

PROFESSORS *J. W. Floyd*, HEAD, *T. W. Daniel*, *L. W. Turner*; ASSOCIATE PROFESSOR *R. R. Moore*; ASSISTANT PROFESSORS *D. N. Quinney*, *J. F. Vallentine*; COLLABORATOR *J. L. Mielke*.

## Office in Forestry 401

Upon completion of any of the following three programs of study, you are granted the degree of Bachelor of Science in Forest Management. These three programs of study are designed to give you comprehensive training in all branches of Forest Management, including growing, protecting, harvesting, and utilization of timber crops. It is desirable that you know by the end of your sophomore year in which of these three options you will enroll:

(1) *The option in General Forestry* basically provides training in timber management. However, in recognition of the needs of several of the land and resource managing agencies, it also provides training in range management, watershed management, game management, and recreation management. In brief, this course of study conforms to the concept of multiple-use forestry. This pattern of training meets the needs of personnel engaged in the administration of public forest lands.

(2) *The second option, Timber Management*, provides major emphasis on the growing, harvesting, and utilization of timber crops, and is appropriate training for employment in private forest industries or specialized timber work with the public forest managing agencies.

(3) *The third option, in Forest Recreation Management*, is designed to train you for employment with the National Park Service, the U.S. Forest Service, state depart-

ments of conservation, forestry or park services, or municipal park services. Suitable training in outdoor recreation organization, management, and supervision is provided, and in addition to this is given sufficient forestry training to qualify you for various federal Civil Service examinations and positions.

## Required Basic Courses

### —Freshman Year—

Course	Quarter taught and credit		
	F	W	S
English 1, 2, 3 .....	3	3	3
<sup>1</sup> Mathematics 34, 35, 44 .....	3	5	3
Chemistry 10, 11, 12 .....	5	5	5
Forest Management 1 .....	2	...	...
Range Management 1 .....	...	1	...
Wildlife Management 1 .....	...	...	1
<sup>2</sup> Animal Husbandry 1, 2 .....	3	...	2
<sup>3</sup> Engineering Drawing 60 .....	...	1	...
M.S., A.S., or P.E. ....	1	1	1

### —Sophomore Year—

Course	Quarter taught and credit		
	F	W	S
Botany 24, 25, 30 .....	5	5	5
Botany 120 .....	...	...	5
Civil Engineering 81, 80 .....	3	3	...
Physics 6 .....	...	5	...
Agronomy 58 .....	...	...	5
Economics 51 .....	5	...	...
Speech 105 .....	...	3	...
Geology 3 .....	5	...	...
M.S., A.S., or P.E. ....	1	1	1

<sup>1</sup>Students presenting 1½ units of high school algebra or otherwise qualified to take college algebra (Math 35) are not required to take Math. 34. High school geometry is prerequisite to Math. 34, 35, 44.

<sup>2</sup>Not required of students taking the Timber Management option.

<sup>3</sup>Not required of students who have had adequate training in engineering-mechanical drawing in high school.

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## Summer Camp

Course	Credit
Forest Management 96 .....	3
Forest Management 97 .....	4
Range Management 98 .....	1
Wildlife Management 99 .....	1

## A—General Forestry

### —Junior Year—

Course	Quarter taught and credit		
	F	W	S
Forest Management 106, 107 .....	4	3	
Forest Management 112, 113 .....	3	2	
Forest Management 114, 115 .....	3	3	3
Forest Management 118, .....	3		
Forest Management 132 .....	3		
Forest Management 146 .....		3	
Range Management 126 .....	5		
English 111 (or 112) .....		3	
Forest Management 134 .....	3		
Forest Management 147 .....		2	
Wildlife Management 150 .....			5

### —Senior Year—

Course	Quarter taught and credit		
	F	W	S
Forest Management 121 .....	4		
Forest Management 122 .....	4		
Forest Management 123 .....		3	
Forest Management 126 .....	3		
Forest Management 133 .....	2		
Forest Management 137 .....		3	
Forest Management 119 .....		3	
Forest Management 120 .....	3		
Range Management 131 .....	4		
Range Management 180 .....	4		
Forest Management 147 .....		2	
Range Management 162 .....			5

## B—Timber Management

If you choose the Timber Management option, add the following courses to those of the General Forestry option and omit Range Management 131, 180, and Forest Management 119:

Course	Quarter taught and credit		
	F	W	S
Forest Management 116 .....			2
Forest Management 125 .....	3		
Forest Management 129 .....		2	
Forest Management 130 .....			4
Forest Management 131 .....		3	
Zoology 105 .....	3		
Botany 140 .....		4	

## C—Forest Recreation Management

If you choose the Forest Recreation Management option you take the same schedule as General Forestry with the exception of Animal Husbandry 1 and 2; plus the following courses:

Course	Quarter taught and credit		
	F	W	S
Landscape Architecture 130 .....			2
Forest Management 138 .....	2		
Forest Management 139 .....		3	
Civil Engineering 120 .....	4		
Landscape Architecture 3 .....			3

## Graduate Study

*The degree of Master of Science in Forest Management* may be earned by a student who has an undergraduate degree in forestry, with acceptable scholarship, upon completion of a prescribed course of study and fulfillment of other requirements listed by the School of Graduate Studies. Normally you are required to take all of the courses in the 200 series taught in the Forest Management Department. One or two years may be required, depending upon whether you are able to devote full or only part time to your studies. As an applicant you should submit an official transcript of your college courses and an official application for admittance to the dean of the School of Graduate Studies. Application forms may be obtained at his office.

*The Master of Forestry degree* program is available to students possessing a non-forestry Bachelor's degree, with acceptable scholarship. The requirements include completion of the required, basic lower division courses, the forestry summer camp program, the required upper division Forest Management curriculum, and ten units of graduate (200 series) course work. This program may require two or more years, depending upon

<sup>1</sup>Taken in spring quarter of freshman year.



how closely related to forestry is your undergraduate work. For this program you should apply as described in the paragraph above.

One research fellowship is available to a graduate student in Forest Management. Application for this fellowship should be made to the head of the Forest Management Department.

## Forest Management Courses

**1. Survey and Orientation.** Survey of the profession of Forest Management, and the relation of conservation and multiple uses of wildland resources to the welfare of the state and nation. (2F) Turner, Floyd

**10. Forest and Range Conservation.** An introduction to conservation problems designed to acquaint you with the nature and extent of the renewable resources of the United States and the methods of conservatively using them. Open to all students except those registered in the College of Forest, Range, and Wildlife Management. (2W) Staff

**26 Wood Technology and Mechanical Properties of Wood.** For vocational education or industrial arts majors. Covers structure, identification, and mechanical properties of commercial woods of the United States. (3W) Staff

**96. Forest Surveying.** Practical field problems in surveying methods commonly employed in Forest, Range, and Wildlife Management. Lab Fee \$5. (Summer camp 3 credits) Tocher, Daniel, Moore

**97. Forest Practice.** Field studies in inventories, successional stages, and growth of stands of trees. Study of forest soils and related land use. Lab fee \$5. (Summer camp 4 credits) Tocher, Daniel, Moore, Turner

**103. Silviculture and Dendrology.** Basic Silvics; Silvicultural systems; western conifers and western regional silviculture; elements of eastern hardwoods and types. Not open to Forest Management majors. Prerequisites: Range 126 and Summer Camp. (4F) Daniel

**104. Forest Management and Economics.** Organization of a forest for production: surveys, normal and actual growing stock, determination of allowable harvest, management plans; economics influencing management. Not open to Forest Management majors. Prerequisite: Forestry 103. (3S) Moore

**106. Forest Measurements I.** Measurements of timber in log, tree, and stand; log rules and scaling; statistical methods useful in analyzing forest data; timber cruising practices. Prerequisite: Summer Camp. (4W) Moore

**107. Forest Measurements II.** Volume and yield table compilation; growth of even-aged, all-aged and residual cutover stands. Prerequisite: Forestry 106. (3S) Moore

**112. Dendrology I. Hardwoods.** Identification, distribution and silvics of the more important forest trees in the United States. Prerequisite: Summer Camp. (3F) Quinney

**113. Dendrology II. Conifers.** Identification, distribution, and silvics of the more important forest trees in the United States. Prerequisite: Summer Camp. (2W) Quinney

**114. Silviculture I.** Characteristics of the tree species which influence silvicultural practice in the United States. Prerequisites: Summer Camp, Range 126, Forestry 112, Botany 120. (3W) Daniel

**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: Forestry 114. (3S) Daniel

**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. Prerequisite: Forestry 115. (2S) Daniel

**118. Forest Protection I.** Prevention, pre-suppression and suppression of forest and range fires, including economic and physical effects; fire behavior. Field trips. (3F) Floyd

**119. Forest Protection II.** Problems of administration and economics in protecting forests from biological enemies. Prerequisites: Forestry 114, 115. (3) Staff

**120. Silviculture III.** Regional silviculture of the United States. Prerequisite: Forestry 115. (3W) Daniel

**121. Forest Management.** Physical factors influencing the regulation of a forest for sustained yield; site, growing stock and rotation; compilation of data for management plans. Prerequisite: Forestry 107, 115. (4F) Moore

**122. Forest Valuation.** Determination of monetary values in forest growing stock and land. Analysis of alternate management methods by use of standard valuation techniques. Prerequisite: Forestry 121. (4W) Quinney

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- 123. Forest Economics.** Economic problems involved in the utilization of forest land and timber, and in the distribution of forest products. Prerequisite: Forestry 122. (3S) **Quinney**
- 125. Logging.** Principles and methods of harvesting wood products, with emphasis on cost, values, and the application of forestry to the harvesting process. Prerequisite: Forestry 97. (3F) **Moore**
- 126. Wood Technology.** Structure and identification of the economic woods of the United States. Prerequisites: Forestry 112, 113. (3F) **Staff**
- 129. Mechanical Properties.** Factors affecting the strength of wood. (2W) **Staff**
- 130. Milling and Products.** Manufacturing, grading, seasoning and preserving lumber, including a study of the wood-using industries and their products. (4S) **Staff**
- 131. Forest Products Marketing.** Principles of marketing applied to lumber and other forest products. (3S) **Quinney**
- 132. Public Land Administration.** Organization and functions of conservation agencies affecting range, forest, and wildlife administration; personnel management problems. (3W) **Floyd**
- 133. Forest History and Policy.** Development of federal, state, and private forest policy. (2W) **Turner**
- 134. Aerial Photo Interpretation.** Elements of photogrammetry; use of aerial photographs in mapping vegetation types and estimating timber volumes; construction of planimetric maps from verticle photographs. (3F) **Moore**
- 137. Improvements and Recreation.** Recreational use of forests and the classifications and planning of areas suitable for this purpose. Field trips. (3S) **Floyd**
- 138. Recreational Land Classification.** Land classifications and economics of various forms of forest recreational use. (2F) **Floyd**
- 139. Recreational Structures.** Construction of various forest recreational facilities. (3W) **Floyd**
- 145. Forest Problems.** Individual study and research upon a selected forestry problem approved by the instructor. (1-3F, W, S) **Staff**
- 146. Junior Field Problems.** Study of forest operations. Junior year. Fee \$40. (3S) **Staff**
- 147. Forest Seminar.** Systematic review of Forestry. (2S) **Floyd**
- 201, 202, 203. Advanced Forestry Seminar.** Review and discussion of advanced current literature. (1F, 1W, 1S) **Turner**
- 204. Forest Ecology.** Study of past and present distribution of forest species and forest types and the physical-biological basis of distribution and growth performance. (3W) **Turner**
- 205. Silviculture.** Intensive study of a particular region by individual students. Group work consists of advanced treatment of silvics and silviculture, with emphasis on physiological aspects of both subjects. (3W) **Daniel**
- 206. Forest Management and Valuation.** Application of forest management principles; forest organization and development; forest regulation, valuation and control of operations. (2F) **Moore**
- 207. Forest Protection.** Advanced study in specialized fields of forest protection. (2F) **Floyd**
- 208. Forest Measurements.** Application of statistical measurements to forest problems. (3F) **Moore**
- 209. Forest Economics.** Study of the interaction of markets on the demand for lumber and forest products. (2F) **Quinney**
- 210. Forest Problem.** Individual advanced study upon a selected forestry problem. (2 to 10F, W, S) **Staff**
- 211. Thesis.** Original research on a problem in Forest Management, to be concluded by preparation of a thesis. (10 to 15F, W, S) **Staff**

*They help us most who demand  
our best.*

# Department of Range Management

PROFESSORS *L. A. Stoddart*, HEAD, *C. W. Cook*, *A. D. Smith*; ASSISTANT PROFESSORS *D. L. Goodwin*, *P. R. Ogden*, *M. E. Robinson*, *J. F. Vallentine*.

## Office in Forestry 306

A four-year program leading to the degree of Bachelor of Science in Range Management is available. Opportunity is given under this program to specialize in General Range Management, Forest-Range Management, or Watershed Management.

Graduates are qualified for positions such as Forest Ranger, Soil Conservationist, and Range Manager, or Range Conservationist under the United States Civil Service Commission, with such federal agencies as the Forest Service, Soil Conservation Service, Indian Service, and Bureau of Land Management. At present an acute shortage exists in qualified men for such positions, and employment opportunities are excellent. State land management and both federal and state research opportunities are also unusually good.

The graduates from these programs are qualified for many private jobs, such as operating a livestock ranch, technical foreman for livestock companies, adviser to land management companies, and range land appraiser.

*Required Basic Courses.* You must complete a core of basic course work as detailed below. In consultation with your adviser, you must elect other course work to meet your personal objective in training. You must obtain from your adviser approval of a complete study program before becoming a candidate for a degree. It is recommended that this be done as early as possible and, in no instance, later than the junior year.

During the freshman and sophomore years, all range majors must complete the following:

Course	Minimum quarter-hour credits
English 1, 2, 3 .....	9
College algebra and trigonometry .....	8
Chemistry, including organic .....	15
Botany, including taxonomy .....	15
Physics .....	5
Economics .....	5
Soils .....	5
Geology .....	5

During the junior and senior years you must complete the following:

Plant ecology .....	5
Plant physiology .....	5
Range plant communities .....	8
Agrostology .....	4
Watershed management .....	4
General range management .....	6
Range field problems .....	3
Range technical problems .....	3
Range improvement .....	2
Range seminar .....	6

The following fields of specialization are recognized in the department:

(1) *General Range Management.* Elective course work should emphasize range management and animal husbandry. The student is fitted for management of range lands, public range land administration, and private range operation.

(2) *Forest-Range Management.* Elective course work in forest management should be emphasized, including summer camp. This option provides training for multiple use management of forest and range lands. The student is especially fitted for work with the U. S. Forest Service.

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(3) *Watershed Management.* Elective work should emphasize mathematics, soils, and hydrology. Sophomore students should take Plane and Solid Analytical Geometry, Integral Calculus, and Differential Calculus. With proper selection of elective subjects, you may qualify for employment as a forester (range), forester (research), or as a range conservationist.

Among recommended electives are all courses in Range Management; Forest Management 103, 104, 106, 118, 130, 132, and forestry summer camp; Wildlife 150, 153, 155; Civil Engineering 81, 141, 173; Agronomy 103, 114, 155, 165; Geology 115; Applied Statistics 131, 132; Botany 121; Animal Husbandry 2, 10, 110, 125, 150; Veterinary Science 120; and Zoology 2, 112.

*Minor in Range Management.* The following courses in Range Management are suggested for students who wish to minor in this field (requirements subject to approval by the Range Department): Range 126, Plant Ecology, 5 credits; Range 160, Principles of Managing Range Lands, 6 credits; Range 130, 131, 132, Range Plant Communities, 10 credits; Range 181, Range Economics, 3 credits.

### Graduate Study

The degree of Master of Science in Range Management is granted upon completion of an arranged course of study. Adequate facilities are available to allow emphasis upon such related fields as forestry, soil conservation, animal husbandry, botany, wildlife, economics, or soils. A Bachelor's degree in range management or a related subject is prerequisite to advanced study.

To a selected few students, a program of instruction and research

leading to the degree of Doctor of Philosophy also is offered. Students having the Bachelor's or Master's degree should contact the department head for information concerning eligibility for study toward this degree.

*Assistantships.* There are available to graduate students a number of assistantships which will defray most of the costs of attending school. Such assistantships involve part-time work for the Department as research assistants. They generally pay \$125 per month or more and include exemption from non-resident tuition fees. Several of these assistantships are available each year, and interested students should apply to the department head for further details.

### Range Management Courses

1. *Elements of Range Management.* Introduction to the problems and methods in Range Management. (1W) Stoddart

98. *Plant Community Analysis.* Field practice with native vegetation. (1 Summer Camp) Goodwin

126. *Plant Ecology.* Analysis of habitat factors that influence plant growth and distribution; attention to plant succession and competition and to plant indicators. Prerequisites: Botany 30, Agronomy 56 or 58. Lab fee \$1. (5F, S) Stoddart

130. *Range Plant Communities — Grasslands.* Composition, distribution, successional patterns, and management of grassland ranges. Prerequisite: Botany 30. Lab fee \$1. Two lectures, one lab. Saturday field trips may be scheduled. (3F) Goodwin

131. *Range Plant Communities—Forests.* Composition, distribution, successional patterns, and management of forested ranges. Prerequisite: Botany 30. Two lectures, two labs. Saturday field trips may be scheduled. Lectures may be taken without labs. (2 or 4W) Goodwin

132. *Range Plant Communities—Deserts.* Composition, distribution, successional patterns, and management of desert ranges. Prerequisite: Botany 30. Lab fee \$4. Two lectures, one lab. Saturday field trips may be scheduled. (3S) Goodwin

**160. Principles of Managing Range Lands.** A general course designed to give a knowledge of how to evaluate, increase, and perpetuate range. Field trips arranged. Credit not allowed students having credit in Range 162. Five lectures, one lab. Lab fee \$2. (6F) **Cook**

**162. Range Management.** Problems in managing native range lands; maintenance of production; utilization of range forage; and range livestock management. Prerequisite: Summer camp. (5S) **Cook**

**163. Range Improvement.** Methods and problems involved in seeding range lands, improving stock watering facilities, and fencing ranges, terracing, water spreading and use of dams on range lands. Prerequisite: Range 160 or 162. (2W) **Stoddart**

**164. Technical Problems in Range Management.** Specialized problems in range management and range administration encountered by the technician. Prerequisite: Range 160 or 162. (3W) **Stoddart**

**180. Watershed Management.** Floods, soil erosion, and runoff on range and forest lands, effects of vegetation in equalizing runoff and preventing erosion, and methods of rehabilitating damaged watersheds. Prerequisite: Range 126. Three lectures, one lab. Saturday field trips may be scheduled. Lab fee \$2. (4F) **Goodwin**

**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 160 or 162. (3W) **Cook**

**192, 193, 194. Range Seminar.** A systematic review of range management and related subjects. Prerequisite: Range 160 or 162. (2F, W, S) **Staff**

**195. Range Problems.** Individual study and research upon a selected range problem. (1 to 3F, W, S) **Staff**

**196, 197. Range Field Problems.** Field study of range management operation and research. Courses 196 and 197 are given alternate years. Lab fee \$35. (3F) **Goodwin**

**200. Range Thesis.** Original research and study on a problem in range management. (1 to 15F, W, S) **Staff**

**204. Land Use Seminar.** Current problems and practices in wildland management, with emphasis on western range. (2F) **Stoddart**

**205. Seminar in Range Nutrition.** Problems in management and research in the field of plant and animal nutrition on the western range. Taught alternate years. Not given 1958-59. Prerequisite: Animal Husbandry 10. (3W) **Cook**

**206. Research Methods.** A study of research methods in range management and related subjects. Prerequisite: Applied Statistics 132. Offered 1958-59 and alternate years. (3W) **Cook**

**210. Environmental Factors.** Environmental factors and interaction between organisms and environment as found on native range land. Offered 1958-59 and alternate years. Prerequisite: Range 126. (3W) **Goodwin**

**211. Synecology.** Development, structure analysis, and classification of native range vegetation. Taught alternate years. Not given 1958-59. Prerequisite: Range 126. (3W) **Goodwin**

**280. Advanced Watershed Management.** Advanced study of technical problems encountered in watershed management. Prerequisite: Range

180. Alternate years. Not taught 1958-59. (2S) **Goodwin**

**281. Advanced Range Economics.** Advanced study of economics of various systems of range management, range seeding, land operation, and livestock management. Prerequisite: Range 181. (2S) **Smith**

*Purpose is the beginning of learning.*



# Department of Wildlife Management

PROFESSORS *W. F. Sigler*, HEAD, *G. H. Kelker*; ASSOCIATE PROFESSOR *A. W. Stokes*; TEACHING ASSISTANT *R. Smith*; COLLABORATORS *N. Benson*, *R. V. Bulkley*, *O. B. Cope*, *J. B. Low*.

## Office in Forestry 302-B

Upon completion of basic courses and the upper-division requirements outlined in the study program, you receive the degree of Bachelor of Science in Wildlife Management.

Course work in the junior year provides basic training in both of the *two options offered by the department: Game Management and Fisheries*. The work of the senior year should complete the option of Game Management or Fisheries started in the junior year.

*The option in Game Management* stresses ecological and economic phases of important game birds and mammals found throughout the United States.

*The Fishery option* trains you primarily for management of freshwater fish. The general principles, however, apply to marine and anadromous fish as well. Graduates find work in marine as well as freshwater fishery fields. Inasmuch as fishing is the chief recreational activity in the United States, this resource is being exploited faster than its problems can be solved. This option includes many leads to other fields of study.

You receive ample opportunity during the school year to learn field techniques that you will use after graduation. These include census methods of fish and game, hunter checking station and creel census assignments, determination of sex, age, and growth rates of fish and game, and evaluation of habitat.

*Required Basic Courses.* You must complete a core of basic courses as detailed below. In consultation with your advisor you must elect other course work to meet your personal objective in training. You must obtain from your advisor approval of a complete study program before becoming a candidate for a degree. It is recommended that this be done as early as possible, and in no instance later than the junior year.

If you wish to work for the U.S. Forest Service upon graduation you should plan your courses so that you will qualify for the Forest Civil Service entrance examinations. Summer Camp and some upper division forestry courses are recommended.

During the Freshman and Sophomore years you should complete the following:

English 1, 2, 3 .....	9
College algebra and trigonometry .....	8
Chemistry, including organic .....	15
Botany, including taxonomy .....	15
Zoology: invertebrate, vertebrate and entomology .....	15
Physics .....	5
Economics .....	5
Soils .....	5
Survey courses in forest, range, and wildlife management .....	4
M.S., A.S., P.E. ....	6

During the junior and senior years you must complete the following:

Principles of Wildlife Management .....	3
Animal ecology .....	5
Wildlife field problems .....	2
Problem orientation .....	3
Wildlife law enforcement .....	3
Wildlife seminars .....	3
Plant ecology .....	5
Intermediate speech .....	3
Applied statistics .....	3
Technical writing or Advanced writing problems .....	3

In addition to the above courses, if you choose the game option you will take at least two of the following:

Upland game management, three credits; Waterfowl and furbearer management, five credits; Big game management, five credits.

If you choose the fishery management option you must take:

Limnology, four credits; Fish management, three credits; Techniques of fishery management, five credits; Ichthyology, four credits.

Electives from associated departments are chosen by you with approval of your major professor. Recommended electives include: all courses in Wildlife, Range, or Forestry; Applied Statistics 132, 141; Botany 112; Chemistry: organic, physical, or biochemistry; Civil Engineering 81, 171; Animal Husbandry 150; Geology 3; Journalism 112, 120; Photography 51; Physical Education 36; Physiology 4, 121, 122, 131; Zoology 112, 116, 119, 121, 122, 128, 129.

## Graduate Study

The advance degrees, Master of Science and Doctor of Philosophy in Wildlife Management or in Fishery Management, are granted upon completion of a prescribed course and fulfillment of the Graduate School requirements.

**Assistantships.** The Utah Cooperative Wildlife Research Unit provides eight research assistantships

for graduate students in the department. The Wildlife Management Department has one teaching assistantship. In addition there are usually several grants from outside conservation agencies available to support graduate research. As a prospective student you should submit formal application with a transcript of college credits and references to the dean of the School of Graduate Studies. Inquiry as to admission should be directed to the head of the Wildlife Management Department. Applications for assistantships should be directed to the Director of the Wildlife Research Unit or the head of the department.

## Wildlife Management Courses

**1. Elements of Wildlife Management.** Introduction to the problems and methods of wildlife management. (1S) **Staff**

**99. Wildlife Practice.** Integrated studies of wildlife populations in relation to land uses. Lab fee \$5. (1 Summer Camp) **Kelker**

**145. Principles of Wildlife Management.** Characteristics of animals and their habitat in relation to general management practices. (8F) **Stokes**

**146. Management of Upland Game.** Taxonomy, life histories, distribution, environmental needs, and plans for management of game birds and small mammals. Two lectures, one lab. Prerequisite: Wildlife 145. (8S) **Stokes**

**147. Waterfowl and Furbearers Management.** Taxonomy, life histories, habitat requirements, economic importance, and plans for management of waterfowl and furbearers, especially muskrat and beaver. Prerequisite: Wildlife 145. Three lectures, field trips. (5S) **Stokes**

**150. General Wildlife Management.** Principles of animal ecology and wildlife management; life histories, economics, and management phases of important species of big game, upland game, waterfowl, and fish. No credit allowed wildlife management majors. Five lectures; field trips arranged. (5S) **Kelker**

**153. Big Game Management.** Life histories, distribution, numerical variation, enemies, and management activities for big game animals. Prerequisite: Wildlife 145 or 150. Three lectures, two labs, including field trips. (5W) **Kelker**

## 186 USU — Forest, Range and Wildlife Management

**155. Economic Wildlife.** General importance of wildlife resources; natural history, economic values and control methods for rodents and predators; identification of skulls and skins; brief evaluation of hawks and reptiles. Two lectures, one lab. (3W)

**Kelker**

**Ichthyology.** Ecology, classification, and life histories of native and introduced fishes. Two lectures, two labs. (See Zoology 155) (4W)

**Sigler**

**157, 158, 159. Wildlife Seminar.** Discussion of current developments in wildlife management. Two recitation periods per week. (1F, 1W, 1S)

**Staff**

**160. Animal Ecology.** Distribution and behavior of animals as affected by various environmental factors. Special attention to inter-relationships of biotic communities. Three lectures, two labs, including field problems. (5F)

**Staff**

**161. Limnology.** Physical, chemical and biological factors affecting occurrence and productivity of fishes and other aquatic animals in fresh waters. Prerequisites: Botany 30, Zoology 13. Two lectures, two labs. (4F)

**Sigler**

**165. Fishery Management.** Principles and techniques in lake, pond and stream improvements; ecology of game fishes, propagation methods, common fish diseases. Prerequisite: Zoology 155. Two lectures, one lab. (3S)

**Sigler**

**169. Techniques in Fishery Management.** Mechanics of collecting and analyzing life history material of fishes. Prerequisites: Zoology 155, Wildlife 161. Two lectures, three labs. (5W)

**Sigler**

**170. Wildlife Problems.** Individual study and research upon a selected wildlife problem. (1 to 5F, W, S)

**Staff**

**171. Field Problems.** Study of wildlife management operations of various agencies in the West. Fee \$35. (2F, S)

**Staff**

**172. Problem Orientation.** A discussion of the needs of and approach to wildlife investigations, presenting data, analyzing the problem, and drawing conclusions relative to research in wildlife management. (3W)

**Kelker**

**175. Wildlife Law Enforcement.** Review of state and federal regulations of fish and game; discussions of apprehension of violators, collection of evidence and its use in court. Offered in even-numbered years. (3W)

**Sigler**

**210. Advanced Field Problems.** Field training in techniques not covered in undergraduate courses. (1 to 5F, W, S)

**Staff**

**253. Advanced Big Game Management.** Population dynamics, census methods, hunting regulations, and management plans. Prerequisite: Wildlife 153 or equivalent. Two lectures, one lab. (3W)

**Kelker**

**257. Graduate Seminar.** Discussion of problems in selection and writing of research projects; discussion of current problems. Time and credit arranged. (F, W, S)

**Stokes**

**258. Graduate Seminar.** Discussion of current investigations by class members and by representatives of state and federal agencies. (2W)

**Low**

**259. Graduate Seminar.** Review of current literature. Discussion of the completion and publication of students' technical papers. (2S)

**Sigler**

**260. Advanced Animal Ecology.** Population dynamics, animal behavior, and other ecological aspects not covered in Wildlife 160. Prerequisite: Wildlife 160 or equivalent. (3W)

**Stokes**

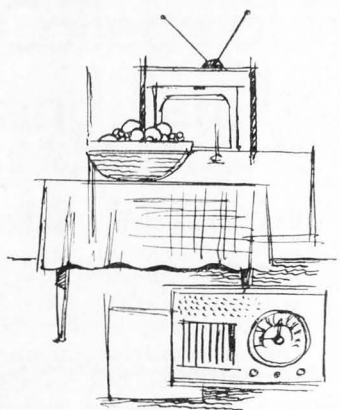
**261. Advanced Limnology.** Advanced study of factors affecting productivity of fresh water. Prerequisite: Wildlife 161 or equivalent. Two lectures, two labs. (4F)

**Sigler**

**270. Research and Thesis.** Credit for field or laboratory research, library work, and thesis writing. (3 to 15F, W, S, Su.)

**Staff**

*Who dares to teach must never  
cease to learn.*



*College of Home and  
Family Living*



Una Vermillion, Acting Dean

## College of Home and Family Living

*Department of Clothing, Textiles and Related Arts, 190*

*Department of Family Living and Child Development, 192*

*Department of Foods and Nutrition, 194*

*Department of Home Economics Education, 195*

*Department of Household Administration, 199*

*Combination Major in Home and Family Living and  
Secretarial or Clerical Practice, 197*

*Degrees Offered:*

*Bachelor of Science*

*Master of Science*



# College of Home and Family Living

Una Vermillion, Acting Dean

## Office in Home and Family Living 102-B

The College of Home and Family Living provides a well rounded educational program, emphasizing human relationship as well as theory and technical skills. The major purpose of the College is twofold: first to help you prepare for more effective living both in the home and the community; second, to help you prepare for a career in an area of your choice.

*Professional opportunities open to you* as a graduate in the College of Home and Family Living include teaching, extension service institutional management, research in home economics and business, and working with children in nursery schools, day-care centers, and in hospitals.

*The departments in this college are:* Clothing, Textiles and Related Arts; Family Living and Child Development; Foods and Nutrition; Household Administration; and Home Economics Education.

*A Bachelor of Science degree and a Master of Science degree* are offered in each of these programs. Courses can be arranged so that you can obtain your MS degree in these ten-week summer sessions, providing that your research project can be done on the job during the winter months.

Curricula in Foods and Nutrition, in Home Economics Education, and in Clothing, Textiles, and Related Arts are based on a core of required courses designed to

give a liberal education for individual, family and community living and to provide desirable basic training in all activities related to the successful management of the home. These requirements, together with the University requirements, comprise a large portion of the work of the freshman and sophomore years. Core courses which meet the requirements for the above areas include:

Number	Course	Credit
HA 10	Introduction to Home Economics....	1
CTRA 8	Clothing for the College Girl.....	3
CTRA 4	Clothing Selection .....	2
FN 5	Nutrition .....	3
FN 24	Food Preparation .....	5
CD 67	Children in the Family .....	3
CD 68	Pre-School Laboratory .....	2

Core courses which meet the requirements for a major in Household Administration or Family Living and Child Development vary somewhat and are described under the department headings.

Not all women students enrolled in the University will choose to major in the College of Home and Family Living, but all women students are interested in eventually becoming homemakers. Thus either a composite course or a series of courses within the College of Home and Family Living will be required of all women students who enter the University in the fall of 1958.

# Department of Clothing, Textiles and Related Arts

ASSOCIATE PROFESSORS *F. Gilmore*, HEAD, *T. Johnson*; ASSISTANT PROFESSOR *E. Nyman*; INSTRUCTOR *H. Terasawa*.

## Office in Home and Family Living 204

*For a major in Clothing, Textiles and Related Arts* you must complete the following courses in addition to the Home and Family Living core courses: Clothing 24, 25, 105, 112, 125, 165, 170, 175, 185, 191; Household Administration 149, 150, and 18 credits in Visual Arts, including Visual Arts 1, 5, 40, 115, 135.

For a minor in CTRA you must complete the following courses in addition to the H&FL core courses: CTRA 24, 115, plus seven hours of electives.

In cooperation with other departments, the Department of Clothing, Textiles and Related Arts offers majors in the following fields: Textile Design and Research, Teaching of Clothing and Textiles, and Fashion Merchandising.

*Fashion Merchandising.* If you are preparing for Fashion Merchandising you may wish to complete a major in CTRA and a minor in Business Administration, or a major in Business Administration with a minor in CTRA.

*Textile Research.* If you are preparing for Textile Research you should complete a double major in CTRA and in Chemistry.

*Home Projects.* A home project conducted during the summer between the sophomore and junior years is required of all majors in Home Economics Education and CTRA. Clothing 25 is a prerequisite. The project is turned into the department within the first two

weeks of the fall quarter to be scored. The purpose is to develop speed and skill in techniques of construction and fitting through more experience than can be given in class time.

## CTRA Courses

**4. Clothing Selection.** Wardrobe planning and buying for the college girl, considering the principles of design in relation to your appearance, personality and needs; care and repair of clothing. Open to majors and non-majors. (2F, W, S) Terasawa

**6. Dress Construction.** Open to all college girls who have not had previous construction experience and wish to learn to sew. Construction of a project in cotton and a tailored dress. (3F, W, S) Gilmore

**8. Basic Clothing Construction.** Open to all college girls who have had previous experience in clothing construction and wish to develop further judgment in pattern and fabric selection; understanding and applying principles and techniques of elementary garment construction and fitting. Prerequisite: CTRA 4. (3F, W, S) Nyman; Terasawa

**15. Clothing Selection for Men.** Men's apparel as related to the wearer. Consideration is given fundamentals of fabric and garment selection. Organized to meet the needs of men in all colleges of the University. (2W) Gilmore

**24. Elementary Textiles.** A study of fibers, yarns, fabrics, and finishes related to consumer problems. (3F, W, S) Gilmore

**25. Advanced Clothing Construction.** Consideration is given to 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, construction, and finishes. Prerequisites: CTRA 4, 6 or 8, 24, and Visual Arts 5. (3W, S) Gilmore

**27. Household Textiles.** Consideration is given fabrics for household and personal use, stressing selection, utilization, care, and cost. Prerequisite: CTRA 24. (3S) Alternate years only. Not taught in 1958-59. Gilmore

**33. Home Furnishings.** Practical experience in selecting, refinishing and arranging home furnishings in relation to a specific problem. Laboratory includes elementary furniture upholstery, wood finishing, and making draperies. (3F, W, S) Nyman

**41. Weaving.** Fundamental principles of weaving. Emphasis on weaving for practical use—place mats and napkins, luncheon sets, cotton skirt, blouse or apron material, etc. (3W) Nyman

**105. History of Costume.** A study of social, economic and political influence on dress and fabric. Modern fashion interpreted in terms of historic and national costumes and world events. (3F) Terasawa

**112. Costume Design.** A practical application of principles of design to clothing design and illustration. Prerequisites: Visual Arts 1 and 5, CTRA 4. Recommended, CTRA 105. (2W, S) Terasawa

**115. Art in Everyday Living.** Study of art elements and principles of design as applied to dress, the home, and daily living. Prerequisites: Visual Arts 1 and 5. (3F, W, S) Terasawa

**125. Draping.** Creative experience in dress designing by draping on the dress form. Emphasis placed on fitting and understanding the effect of pattern, grain, and textures on design and dress. Problems consist of making a French lining and draping two garments. Prerequisite: CTRA 25. Recommended, CTRA 170. (5W, S) Nyman, Terasawa

**133. Advanced Home Furnishings.** A laboratory course giving experience in furniture renovation. (3Su.) Nyman

**141. Advanced Weaving Problems.** Pattern draft reading and proving drafts on paper to understand different weaves. Weaving for practical use woolen or tweed material, stoles, drapery, and upholstery material, etc. Prerequisite: CTRA 41. (3W, S) Nyman

**165. Tailoring.** Application of techniques used in tailoring suits and coats. Prerequisite: CTRA 25. Recommended, CTRA 125. (3F, W) Gilmore

**169. Newer Development in Textiles.** Designed for teachers and advanced students of Clothing and Textiles. Class includes a study of fibers, finishes, and materials being placed on the market; economic conditions affecting their production, and factors influencing choice and care of present day materials. Prerequisite: CTRA 24 or equivalent. (3Su.) Gilmore

**170. Flat Pattern Designing.** Principles of design and construction of patterns by flat pattern method; fitting and pattern alteration; development and use of a basic sloper. Prerequisite: CTRA 25. Recommended, CTRA 112. (5F, W) Terasawa

**175. Advanced Textile Problems.** Emphasizes recent textile advances and research techniques. Consideration is given to physical and chemical testing and use of the microscope. Prerequisite: CTRA 24. Recommended, Chem. 10, 11, 12. Outside work required. Alternate years only. Taught in 1958-59. (3S) Gilmore

**185. Children's Clothing.** Clothing needs of children from infancy to early elementary age, in relation to total family clothing; selection and construction of children's garments; care and renovation of clothing. Prerequisite: CTRA 8. Recommended, CTRA 24. (3W, S) Terasawa

**190. Special Problems.** Independent study of a problem in CTRA, in which upper division or graduate student has special interest or need. Consult department head before enrolling. Any quarter. Time and credit arranged. Gilmore

**191. Seminar.** Reports and discussions on current literature in CTRA. (2F, S, Su.) Staff

**204. Clothing Economics.** A study of the factors which influence economics of clothing; analysis of the fashion industry; economics of manufacture and marketing clothing. (3F, W, S) Gilmore

**208. Advanced Problems in Clothing and Textiles.** Work offered in textiles, history of costume, fashion, and advanced clothing construction. Credit arranged. (F, W, S) Staff

**210. Research for Master's Thesis** Gilmore

**290. Special Problems.** Open to graduate students in CTRA. Time and credit arranged. Gilmore

**291. Graduate Seminar.** Open to graduate students in CTRA. (3S, Su.) Gilmore

# Department of Family Living and Child Development

PROFESSOR *D. C. Carter*, HEAD; ASSISTANT PROFESSORS *R. Eames*, *D. B. Lewis*;  
HEAD TEACHER IN CHILD DEVELOPMENT LABORATORY AND COOPERATIVE NURS-  
ERY, *V. Holman*.

## Office in Home and Family Living 114

Family Living and Child Development is a desirable area of study if you are interested in children either professionally or as a prospective parent. A major in child development should prepare you for a more satisfying role as a parent, and professionally for: teaching in, or conducting a nursery school; for teaching in kindergarten or elementary school; for an extension service position in child development and parent education; for teaching in a nursery school in a welfare program, health center, housing unit, industrial plant, or children's hospital.

*The curriculum for a major in Family Living and Child Development includes the following:* FL&CD 80, 138, 150, 174, 175; an additional 18 credits to be selected from FL&CD 115, 125, 155; Clothing Textiles and Related Arts 185; Visual Arts 50 or 151; English 122; Physical Education 81, 84; Psychology 105, 123; Sociology 160; Social Work 165, 177; Speech 118, 167; Zoology 113. Majors in the department are also required to take six hours credit in Household Administration 10, CTRA 4, and Foods and Nutritions 5, plus nine hours selected from: CTRA 6, 8, 24; F&N 24, 25; HA 65. These courses substitute for the general core requirements in the College of Home and Family Living. Residence in the Home Management

House (HA 150) is available for child development majors but is not required.

*If you desire to minor in Child Development* you should take FL&CD 175 and include in your program FL&CD 67, 68, 80, 174, 175, plus four hours credit selected from other courses included in the FL&CD major. The minor is recommended for men in such fields as social work and elementary education who, perhaps more than women in our culture, may benefit from an opportunity to study the young child in such a setting as the Child Development laboratory. For women, the Child Development major and the Child Development teaching major offer a more varied and extensive background in understanding and opportunity for increased skills in working with groups of young children.

*If you expect to teach in kindergarten or elementary school* you must meet the state requirements for teacher certification. It is recommended that you take an elementary teaching certificate with your major in FL&CD. The teaching certificate fills the requirement for a minor.

*For a minor in Family Living* you should complete FL&CD 67, 68, 155; Sociology 60, plus seven hours selected from FL&CD 80, 150; Sociology 160, 162, 163. This minor in Family Living is intended

for students in such fields as Home Economics Education and the social sciences who may plan to teach family relationship courses in the secondary school. It is also intended for students who desire a greater insight into family relationship as a contribution to more satisfying personal living.

## FL&CD Courses

**67. Children in the Family.** To help develop a philosophy of family living as desirable background for the child; understanding of reproduction; fundamentals of growth and development; a beginning concept of guidance. (3F, W, S) **Lewis**

**68. Preschool Laboratory.** Directed observation in the Child Development laboratory. Recommended to parallel FL&CD 67. (2F, W, S) **Eames, Lewis**

**80. Guidance of the Young Child.** Review of development principles with emphasis on social and emotional growth; fostering growth through creative materials and play equipment; guidance philosophy, principles and techniques. Two lectures. Two hours lab. weekly, arranged at time of registration. Prerequisite: FL&CD 67. (3F, W, S) **Eames, Lewis**

**100. Human Growth and Development.** Growth and development from birth to maturity. General behavior patterns characteristic of different levels of maturity; individual differences and needs. (3F, W, S) **Carter**

**115. Growth of the Infant.** Readings in child development from conception to fifteen months of age, with discussion of infant care. Prerequisite: FL&CD 67. (3W) **Lewis**

**125. Parent Education.** Application of principles of child development and family relationships to educational programs for parents. (3F) **Carter**

**138. Survey in Child Development.** History of the child development movement; present agencies and programs to further the welfare of children; nursery school administration. Three lectures and a two-hour nursery school teaching laboratory weekly. (5S) **Lewis**

**140. Special Problems in Child Development.** For qualified students upon consultation with instructor. Time and credit arranged. (S) **Staff**

**150. Seminar.** Discussion of topics in current literature plus independent reading selected according to your interest. (2W) **Carter**

**155. Problems in Marriage and Family Living.** A seminar to study current and emerging problems in marriage and family living, as they affect various family members. An opportunity to examine attitudes, relationships, and practices, and to gain greater understanding of marriage and family life. Prerequisites: FL&CD 67, Psych. 53, and Soc. 60. (3F, W, S) **Carter**

**174. Nursery School Methods.** Readings in research in nursery schools. Collection of material for teacher-directed activities. Special consideration to understanding the needs of the nursery school child, with emphasis on the study of one child and a continuing evaluation of guidance procedures. Must parallel FL&CD 175. (3F, W, S) **Eames**

**175. Practice Teaching in the Nursery School.** An opportunity to apply principles of child guidance in the nursery school. For seniors who have had a substantial amount of professional course work, including FL&CD 80. Child development majors and elementary education students with a teaching major in child development should register for six credits. Child development minors should register for three credits. Students must make arrangements for practice teaching well in advance of registration because of the limited number of students who can be accepted in the laboratory program. (3, 6F, W, S) **Eames**

**210. Research for Master of Science Thesis.** Credit arranged. (F, W, S, Su.) **Staff**

**250. Advanced Seminar in Family Living and Child Development.** Discussion of current readings in family living and child development, with emphasis on development of insight and self-understanding. (2S, Su.) **Carter**

**275. Internship in Nursery School Education.** Work with young children in a situation involving limited supervision and greater responsibility for program planning and direction. Emphasizes experimental methods in working with children, and insight of children's behavior. Time and credit arranged. (F, W, S, Su.) **Eames, Lewis**

*Be unsatisfied until you are doing your best.*



# Department of Foods and Nutrition

PROFESSORS *U. Vermillion*, HEAD, *E. Miller*, *E. B. Wilcox*; ASSISTANT PROFESSOR *P. Rowland*; INSTRUCTOR *M. B. Merkley*.

Office in Home and Family Living 104-A

For a major in Foods and Nutrition you must complete the Home and Family Living core of courses plus the following: Foods and Nutrition 25, 107, 140, 141, 144, 145, 146, 180; Household Administration 149, 150; Chemistry 10, 11, 12; Biochemistry 190.

*For a major in Institutional Management* you must complete the requirements for the Foods and Nutrition major and take the following courses to meet the requirements for an internship as set up by the American Dietetics Association: Bacteriology 10; Physiology 4; Psychology 53; Economics 51; Sociology 70; Business Administration 109; Psychology 102; Education 120; Foods and Nutrition 182 and 184; Accounting 100. A fifth year of internship in some approved hospital, restaurant, or school qualifies you to become a professional dietitian. Internships are always available, and at the end of the fall quarter of the senior year the major professor will aid you in collecting your credentials and filling the application forms specified by the ADA.

*Master of Science Degree.* The Foods and Nutrition department offers opportunity for study and research toward the Master of Science degree. The following courses are offered on the graduate level: Foods and Nutrition 201, 202, 203, 207, 210, 243, 290, and 291.

## Foods and Nutrition Courses

**5. Principles of Nutrition.** The relation of food to family health; factors influencing the body's nutritive requirements; problems applicable to your individual interests. Open to all students. (3F, W, S) **Rowland**

**24. Food Selection and Preparation.** Principles and practice in food selection and preparation. Open to all students. Three lectures and two labs. (5F, W, S) **Rowland**

**25. Meal Preparation for the Family.** Planning, preparing and serving meals for the family. Considers nutritional adequacy of meals at different income levels. Prerequisite F&N 24. (3F, W, S) **Merkley, Rowland**

**28. Food for Special Occasions.** Emphasizes organization and planning, with due consideration to money, energy and time expended. Prerequisite: F&N 24. Open to all students. (3S, Su.) **Vermillion, Merkley**

**107. Experimental Cookery.** Development of experimental methods; their application to investigation in cookery and food preservation; literature in the field. Prerequisites: Organic Chemistry, F&N 24, 25. Alternate years. Not taught in 1958-59. (4W) **Merkley**

**140. Advanced Nutrition.** Fundamental principles of human nutrition and their application to the individual and family group. Prerequisite: Organic Chemistry. (3F, W) **Merkley, Wilcox**

**141. Advanced Nutrition.** Nutritional requirements of the mother during pregnancy and lactation; nutrition of child through infancy to adolescence. Alternate years. Taught in 1958-59. (2S) **Wilcox**

**144. Laboratory Methods in Foods and Nutrition.** Problems in foods and human nutrition, including nitrogen, mineral and vitamin determinations, a dietary study, and a project in animal experimentation. Prerequisite: Organic Chemistry. (2W) **Wilcox**

**145. Diet Therapy.** Application of dietetic principles to problems of disease, with calculation of dietaries in disease. Prerequisite F&N 140. Alternate years. Not taught in 1958-59. (4S) **Wilcox**

**146. Food Technology.** Manufacture and preservation of food products; influence of those processes on physical, chemical, and nutritive values of foods. Prerequisites: Bacteriology 10, F&N 24. Two lectures; 1 two-hour lab. (2F) **Merkley**

**180. Quantity Food Preparation.** Principles of food cookery, applied to large quantity preparation; standardization of food quality, production costs and menu planning. University's food service units used as laboratories. Open to juniors and seniors majoring in dietetics or institutional management. Alternate years. Taught in 1958-59. (5W) **Vermillion**

**182. Institutional Organization and Management.** Principles of scientific management, applied to food service unit. Emphasizes organization, personnel, relationships, records, and sanitation. One unit on specification writing and purchasing methods. Alternate years. Taught in 1958-59. (5S) **Vermillion**

**184. Cost Control in Food Institutions.** Varied aspects of money management as it affects food service in institutions. Alternate years. Taught in 1958-59. (2W) **Vermillion**

**185. Nutrition Refresher Course.** A review of recent developments in nutrition. Students are also required to participate in the annual Weight Control Conference. (2½Su.) **Wilcox**

**190. Special Problems.** Open to qualified F&N majors upon consultation with instructor. Time and credit arranged. (F, W, S) **Vermillion, Wilcox, Merkley**

**201. Laboratory Methods in Foods and Nutrition.** Problems in foods and human nutrition, including nitrogen, mineral and vitamin determinations. Prerequisite: Chemistry 190 or 191, or equivalent. Time and credit arranged. (F, W, S) **Wilcox**

**202. Biological Assay of Foods.** Problems in biological assay of vitamins in foods. Time and credit arranged. (F, W, S) **Wilcox**

**203. Nutrition Laboratory.** Micro-chemical determinations of vitamins and other constituents in small amounts of blood. Prerequisite: Chemistry 190 or 191, or equivalent. Time and credit arranged. (F, W, S) **Wilcox**

**207. Advanced Experimental Foods.** Development of experimental method and its application to cookery. You prepare for independent investigation of foods. Time and credit arranged. (F, W, S) **Staff**

**210. Research for Master's Thesis.** Credit arranged. (F, W, S) **Wilcox**

**243. Recent Development in Nutrition.** Study of problems in nutrition, selected according to your needs. Prerequisite: F&N 140. (2W, S) **Wilcox**

**290. Special Problems.** Time and credit arranged. (F, W, S) **Vermillion**

**291. Graduate Seminar.** Time and credit arranged. (F, W, S) **Wilcox**

## Department of Home Economics Education

ASSISTANT PROFESSOR *V. H. Harder*, HEAD; INSTRUCTOR *M. B. Merkley*.

Office in Home and Family Living 104-B

A Bachelor of Science degree and a Master of Science degree may be earned in Home Economics Education.

This program prepares you for teaching courses in homemaking. Graduates are certified to teach all phases of homemaking in Utah Schools, including federally aided schools.

It is important that you register

with the instructor for Education 121 and 122 two quarters before you plan to do your student teaching. This provides the time necessary to arrange teaching assignments with cooperating schools.

*Lower Division Requirements.* In addition to the Home and Family Living core courses, the following are required to meet Utah certification requirements in Home Eco-

nomics Education: Education 50; Family Living and Child Development 80; Sociology 60; Clothing, Textiles and Related Arts 24, 25, 33; Household Administration 65; Foods and Nutrition 25.

While filling University group requirements, if you are planning to major in Home Economics Education you should keep in mind: (1) Prerequisites: Visual Arts 1, 5; Chemistry 10, 11, 12; Psychology 53. (2) Elective recommendations: Consider developing a subject interest into a teaching minor; e.g., Family Living and Child Development, Visual Arts, Secretarial Science, English, Music, Physical Education, Social Science, etc. (3) Home Project: A home project, conducted during the summer following completion of CTRA 25, is required of all majors in Home Economics Education or Clothing, Textiles and Related Arts. The project is turned in to the department within the first two weeks of the fall quarter, to be scored. Purpose of the project is to help you develop speed and skill in techniques of construction and fitting. It gives you an opportunity for more experience than can be provided during class time.

*Upper Division Requirements:* Clothing, Textiles and Related Arts 115, 165; Foods and Nutrition 140, 146; Household Administration 149, 150, 155; Child Development 125; Psychology 102; Public Health 155; Education 112, 114, 120, 121, 122; sufficient other electives to total 60 credits of upper division work.

*Certification Requirements for Teachers of Vocational Homemaking in Secondary Schools.*

A total of 33 credits in professional education, including Public

Health 155, must be taken to meet the requirements for the General Secondary Certificate and the Vocational Homemaking in Secondary Schools Certificate. Courses recommended for Certification in Vocational Homemaking Education are listed with upper division requirements. These professional courses plus the prescribed subject matter courses in Home and Family Living are necessary for certification in Vocational Homemaking Education in Secondary Schools.

*Services available to teachers:* (1) Guidance and help in meeting requirements for renewing certificates; (2) Opportunity to meet certification requirements; (3) Advanced study leading to Master of Science degree in Home Economics Education.

*Graduate Work in Home Economics Education.* The College of Home and Family Living offers a composite graduate program designed to serve homemaking teachers and extension specialists in home economics. This program is planned to meet professional certification requirements for secondary homemaking teachers and may terminate in a master's degree. The program is flexible, to meet individual needs.

The master's program is administered by the Department of Home Economics Education. However, direction of the individual research program is guided by the instructor in the specific area you select for research. It is desirable that a graduate committee be established during your first quarter of residence. This committee will thereafter approve your graduate study program and will work with you on the thesis problem. (See the section on School of Graduate Studies for regulations on admission

and candidacy for an advanced degree.)

The basic plan for teachers features a three-summer program of residence on campus. Research work is conducted during the school year in on-going classroom situations. Extension service personnel may prefer one quarter on campus during each of three successive years. Research work in this program, however, can also be conducted in relation to employment activities.

*Extension Service Curriculum.* Courses required for entering the USU Extension Service as a County Home Agent are those in the Home Economics Education curriculum as outlined, and in addition Extension Methods 151, three credits. Other recommended courses are: Journalism 12 or 112, three hours; Speech 5, three hours, and Sociology 141, three hours.

A three-month supervised training period in a county is advised for prospective Home Agents. Plans for this training are made with the Director of Extension Service.

## Home Economics Courses

**120. Methods in Teaching Home Economics.** Contributions of Home Economics to the educational program. Understanding students, homes, families, and communities. Guiding and evaluating pupil development. Analysis of teaching situations based upon observation of school activities. Prerequisite or parallel: Psychology 102. (3F, W, S) **Harder**

**121. Problems in Teaching Home Economics.** Study of recent investigation in Home Economics and General Education and their bearing upon Home Economics curriculum and teaching methods. Especially for students who are to qualify for a Vocational Certificate. This course should be taken along with Education 122 and with one other three-hour

Education course so that concentrated work may be had on the campus prior to and following the off-campus student teaching experience. Prerequisite: Home Economics Education 120. (4F, W, S) **Harder**

**122. Student Teaching in Home Economics.** Observation and teaching of homemaking under supervision in public schools having co-operative arrangements with University. Student teacher leaves campus the middle five or six weeks of Fall, Winter, or Spring quarter and teaches a full homemaking program each day in an approved school. Prerequisites: Home Economics Education 120, 121. (8F, W, S) **Staff**

**199. Special Problems in Home Economics Education.** Developed around your individual needs not otherwise provided for in curriculum. (1 to 2 F, W, S) **Staff**

**210. Research for Master's Thesis.** Credit arranged. (F, W, S) **Staff**

**217S. Current Developments in Home Economics Education.** Newer developments in homemaking at the secondary level. Serves advanced undergraduate or graduate students. Students may arrange with instructor to substitute this class for Home Economics Education 120. (8Su.) **Harder**

**237. Seminar.** Opportunity for investigation and reporting on individual problems. Time and credit arranged. (F, W, S) **Staff**

## Major in Home and Family Living and Secretarial or Clerical Practice

Here is a program for women who desire basic training for home and family life plus sufficient secretarial or clerical training to provide professional opportunities outside the home. For a Bachelor of Science degree with this combination major you complete the following Home and Family Living courses and either the Secretarial or the Clerical courses here listed, plus the University group requirements listed in the Catalog introduction.

# 198 USU — College of Home and Family Living

## Home and Family Living Courses

FL&CD 67	Child in the Family .....	3
FL&CD 68	Pre-school Laboratory .....	2
FL&CD 155	Problems in Marriage and Family Living .....	4
	Clothing Selection .....	2
CTRA 4	Basic Clothing Construction....	3
CTRA 8	Elementary Textiles .....	3
CTRA 24	Principles of Nutrition .....	3
	Food Selection and Preparation .....	5
F&N 5	Meal Planning .....	3
F&N 24	Household Equipment or 65 Housing .....	2 or 3
HA 100	Home Management .....	3
HA 149	Home & Family Living upper division electives .....	6
		39

## Secretarial Courses

SS 30	Business Communications .....	3
SS 51	Intro to Sec Science .....	2
SS 43	Secretarial Type .....	2
SS 65	Filing .....	3
SS 69, 70, 71	Transcription .....	3
SS 80, 81, 82	Intermed Shorthand .....	9
SS 92	Business Machines .....	2
SS 167	Office Practice .....	2
SS 175	Office Management .....	3
SS 186, 187	Secretarial Proced. ....	6
*BA 1	Accounting .....	4
		39

## Clerical Courses

SS 30	Business Communications .....	3
SS 51	Intro to Secretarial Science .....	2
SS 42	Business Type .....	2
SS 43	Secretarial Type .....	2
SS 65	Filing .....	3
SS 92	Business Machines .....	2
SS 94	Key-driven Calculator .....	2
SS 96	Posting Machines .....	2
SS 167	Office Practice .....	2
SS 175	Office Management .....	3
SS 186, 187	Secretarial Procedures .....	6
BA 30	Business Mathematics .....	3
PS 11	Commercial Law .....	3
*BA 1	Accounting .....	4

39

\*It is recommended that BA 2 also be completed. 4 hours.

*Small minds discuss persons;  
average minds, events; large minds,  
ideas.*



# Department of Household Administration

PROFESSORS *E. B. Bate*, HEAD, *U. Vermillion*; ASSOCIATE PROFESSOR *R. H. Gardner*; ASSISTANT PROFESSOR *D. B. Lewis*.

## Office in Home and Family Living 104-B

The College of Home and Family Living offers a non-vocational major in Household Administration. This major is suitable for you if your primary interest is in the enrichment of your personal and family living. The program is liberal and provides an opportunity for you to select courses from the academic offerings of the entire University.

*Curriculum for a major in Household Administration* is as follows: University required courses, 55 hours; Home and Family Living core courses, 19 hours; courses for the HA major, 33 hours; courses for a minor of your choice, 18 hours; elective Courses, 61 hours. This makes a total of 186 hours, the number required for graduation.

The University required courses include Basic Communications, Physical Education, and a minimum of eight hours in each of four basic groups. (See Catalog list of these.) The Home and Family Living core courses are listed in this College's introductory material. The HA major courses include Foods and Nutrition 25, HA 149 and 150, and another 23 hours selected from any of the courses offered in the College of Home and Family Living. A minor may be selected in any area, or two related areas, of your choice, but preferably outside the College of Home and Family Living.

The following list is suggested to give some guidance in selecting electives:

Political Science 9. Current World Affairs (1 hour); Political Science 10. American National Government (5); Management 29. Managing Personal Finances (5); Sociology 60. Courtship, Marriage and the Family (3); Sociology 144. Women Today (3); Social Work 162. Mental Hygiene (3); Visual Arts 30. Art Understanding and Appreciation (3); Visual Arts 40. Essentials of Interior Decoration (3); Music 13. Music Appreciation. (3); Public Health 15. Personal Health (2); Speech 5B. Public Speaking (5); English 46. The Bible as English Literature (5); English 122. Children's Literature (3); English 123. Literature for the Adolescent (3); Landscape Architecture 3. Elements of Landscape Architecture and Planning (3); Horticulture 11. Garden Flowers (3).

## Household Administration Courses

10. **Introduction to Home Economics.** Designed to help freshman students become better adjusted to college life. Includes help with the library, studying, and how to use the University catalog. Help is given on the selection of a major in Home and Family Living. (1F) **Vermillion, Lewis**

65. **Housing.** Considers housing needs and practices affecting housing construction and home ownership. Also includes evaluation of house plans. (3F, W, S) **Bate**

## 200 USU — College of Home and Family Living

**100. Household Equipment.** Selection, method of operation, and maintenance of equipment used in the home, with emphasis on kitchen and laundry equipment. (2W, S) **Bate**

**149. Home Management.** Principles of household management. Includes philosophy of homemaking, use of human and material resources, and improvement of housing as related to family living. (3F, W, S) **Bate**

**150. Home Management House.** Residence students are directed in practical management of home experiences. Required of all Household Administration majors. Elective for

other students upon consultation with the advisor of Home Management House. Prerequisites: HA 149; F&N 24, 25. Time arranged. (4F, W, S) **Bate**

**155. Family Finance.** Study of personal and family finance with emphasis on finance plans and investments. (2F, W) **Bate**

**160. Special Problems.** Individual study of management problems in which upper division student wants special help. Consult department head for arrangement of time and credit. (F, W, S) **Bate**

*An essential aim in all education  
is the development of a sense of  
personal responsibility.*



*Division of  
Military Science and Tactics  
and Air Science*



Dean L. Mark Neuberger,  
ROTC Coordinator

## Division of Military Science and Tactics and Air Science

### *Department of Military Science and Tactics, 205*

Army ROTC, 205

Basic Military Science, 208

Advanced Military Science, 208

Joint Army—Air Force Courses and Activities, 208

### *Department of Air Science, 210*

Air Force ROTC, 210

### *Degree Offered:*

Bachelor of Science

also, ROTC Commission

# Division of Military Science and Tactics and Air Science

L. Mark Neuberger, University ROTC Coordinator

Colonel Asa C. Black, Professor of Military Science and Tactics

Lt. Colonel Blair Hale, Professor of Air Science

One of the basic principles of this country is that each citizen has an obligation to serve in the military forces when required for the defense of his nation. The Reserve Officers' Training Corps program is one of several ways by which this obligation can be fulfilled. Through the ROTC program, America offers outstanding college men a pathway from campus leadership to important command responsibilities as officers with the Active or Reserve Military forces.

*Two separate ROTC units are located at Utah State University: Army and Air Force.* Students may initially choose which program they wish to enter; however, subsequent transfer between units is not generally approved because of the difference in curriculum.

The Army and Air Force ROTC programs consist of two two-year courses. The Basic course is normally taken during a student's freshman and sophomore years. It consists of six quarters of work, including drill periods, during fall and spring quarters. The Advanced course of the ROTC program is normally taken during the junior and senior years and consists of six quarters of work plus a summer camp (between the junior and senior years). The Advanced course is both elective and selective. Once entered upon, completion of the Advanced course be-

comes a requirement for graduation unless a proper release is obtained. Physically and mentally qualified students are selected for enrollment in the Advanced course by boards composed of military and civilian faculty members. Selection by the boards is based on academic standing, leadership ability, officer potential and interest in the military. Satisfactory completion of the Basic course is normally a prerequisite for entrance into the Advanced course.

Satisfactory completion of both the Basic and Advanced courses including the summer camp, leads to a commission as a second lieutenant in the Army or Air Force reserve. Outstanding students in both programs are designated Distinguished Military students and are afforded the opportunity of applying for commissions in the Regular Service.

*Deferment from the draft* is offered to all students who maintain satisfactory grades in their academic subjects and in ROTC. Upon completing the program and being commissioned, students normally enter on active duty with the Armed Forces as second lieutenants in the service in which they were commissioned. The period of active service required of ROTC graduates depends on the requirements of the service concerned.



### Enrollment Regulations

*ROTC drill periods* are an integral part of the ROTC program. Registration for one of the drill periods offered is required of all ROTC students. ROTC Band students drill separately under the supervision of the college director of bands.

A combination uniform deposit and laboratory fee is required of all ROTC students. A \$5 deposit is paid at the time of initial enrollment each year. Of this sum, a portion is returned to the student at the end of Spring quarter or when the student drops from school.

### General Requirements

#### (A) Basic Course:

- (1) Be a citizen of the United States.
- (2) Not less than 14 years of age.
- (3) Physically qualified for military service.

#### (B) Advanced Course:

- (1) Satisfactorily complete the basic course, or have equivalent credit.
- (2) Have high moral character.
- (3) Be able to complete the pro-

gram and qualify for appointment as a Second Lieutenant before reaching 28th birthday.

(4) Accept and sign a draft deferment agreement and agree to stipulations of the advanced course contract, outlining the obligations of both the student and the service.

(5) Obtain a satisfactory score on the ROTC Qualification test, which is usually administered to sophomore students during Fall and Winter quarter.

(6) Be selected for enrollment into the Advanced course by a selection board composed of officers and civilian faculty members. Selection is based on academic standing, previous military or air science grades, scores in the tests, moral character, leadership and officer potential.

(7) Have at least two years of college remaining before becoming eligible for a degree. It is desired that all students complete the ROTC program and the requirements for a degree simultaneously.

(8) Transfer membership in any reserve organization of the Armed Forces to the respective ROTC service. Staff personnel of the department will assist students as necessary.

*College in its best sense is a companionship.*



## Department of Military Science and Tactics

COLONEL *Asa C. Black*, PROFESSOR OF MILITARY SCIENCE AND TACTICS.  
 MAJOR *L. A. Civile*, INFANTRY; MAJOR *C. R. Clark*, CORPS OF ENGINEERS;  
 CAPTAIN *R. F. Mayfield, Jr.*, ARMOR; CAPTAIN *M. C. Durham*, ORDNANCE; 1ST  
 LT. *D. A. Tilley*, QUARTERMASTER; ASSISTANT PROFESSORS; MASTER SERGEANT  
*S. F. Clark*, SERGEANT MAJOR; MASTER SERGEANT *H. J. Holcomb*, INSTRUCTOR;  
 MASTER SERGEANT *E. C. Pipes*, INSTRUCTOR; SERGEANT FIRST CLASS *J. S.  
 Brady*, SUPPLY SERGEANT; SERGEANT FIRST CLASS *J. B. Madison*, CHIEF AD-  
 MINISTRATIVE CLERK; SERGEANT FIRST CLASS *T. R. Post*, INSTRUCTOR.

### Office in Military Science 101

The United States Army Reserve Officers' Training Corps exists for the purpose of developing reserve officers in sufficient quantity to provide a corps of well-educated, all-around leaders for an Army that would have to expand rapidly in the event of a national emergency. In this present period of "limited" emergency, it produces new second lieutenants for the Active Army, for the Army Reserve, and a limited number of Distinguished Military graduates who are offered commissions in the Regular Army. Students commissioned in the Army Reserve with the exception of veterans and those complet-

ing flight training are required to serve either six months or two years on active duty. Veterans may serve six months or no active duty; however, they may request two years active duty if they desire. Students participating in flight training are required to serve 3 years on active duty.

Following World War II, General of the Army Dwight D. Eisenhower sent the following message to ROTC men. These words are still significant in the light of current events: "College trains leaders for tomorrow." Your academic curriculum in the Army ROTC will provide the background of knowl-

edge essential to effective leadership, and the actual practice gained in leading others is of inestimable value.

*The Army ROTC consists of two courses: Basic and Advanced.* It is elective on the part of the student as to whether or not he enrolls in the Basic Course; however, a student who enrolls in either of the Army ROTC courses does so for two years at a time. The First enrollment is for the two-year Basic Course; after which, if the student is recommended for further training, he may be enrolled in the Advanced course, subject to any quota limitations. A student who enrolls in either the Basic or Advanced course will complete that course as a requirement for his academic graduation, unless relieved of this obligation by regulations prescribed by the Secretary of the Army. Under the provisions of the contract between the institution and the Department of the Army (DA Form 918), the institution agrees to require that each student who enrolls in either the Basic or Advanced course will complete that course as a prerequisite for his graduation. Upon enrollment in the Advanced course, the student also enters into a contractual obligation to continue in the ROTC for the remainder of his course at the school. Signing of an ROTC draft deferment agreement by a Basic course student obligates the student to elect enrollment in the Advanced course, if he is selected therefore.

*Army Sponsored ROTC Flight Training.* The course is offered to selected Senior Army ROTC students. Instruction is so arranged that it will not interfere with ROTC or regular academic schedules. For acceptance in the course,

students must be enrolled in MS IV ROTC or have successfully completed MS IV and summer camp, and be scheduled to graduate from the University within the same academic year. Academic credit may be arranged upon completion of the program. Interested students must meet class I physical standards for flying. The flight program consists of 71½ hours of training, 35 hours of ground, and 36½ hours of actual flight instruction. Completion of this training qualifies students for a CAA private pilot's license. All training is conducted by CAA approved instructors. ROTC cadets interested in participating in flight training should see their Military Science Class Adviser for further information.

*Summer Camp.* A six weeks summer camp is held at Fort Lewis, Wash., for first-year advanced students. ROTC cadets must attend this course of training between their junior and senior years. Practical application of classroom theory and living in the field make it an interesting and stimulating experience. Students receive pay for time spent at camp and for travel to and from camp.

*Veterans.* Veterans are accepted into the Army ROTC advanced program provided they can qualify as outlined in preceding regulations. Credit may be given all or part of the Basic course depending upon length of service of the individual.

*High School ROTC.* Students who have completed the three-year high school ROTC program may be given credit for the first year Basic course. Army ROTC is a ready-made course, designed and perfected to develop the qualities of leadership required in both military and civil enterprise. This type of leadership is more needed now than

ever before. Lacking it, this country, and the world, faces disaster.

To provide this type of leadership training, a General Military Science program is offered with instruction given in common subjects to provide general background knowledge essential in all branches of the Army. The student is provided with an understanding of the missions, responsibilities, and role of the Army National Defense to include familiarization with major problems confronting the Army in this role. The curriculum includes: A brief presentation of National defense policy and worldwide commitments that require support of the Armed Forces; a brief comparison of military forces of the world; the missions, capabilities, and interdependence of the United States Army, the United States Navy and the United States Air Force; the role of the Army in all conceivable types of warfare. Instruction relies heavily on Military History for background and support. Instructor-student discussions include development of, and major problems of the United States Army, with emphasis on the following:

- (1) Uncertainty of time, type, and location of possible future wars and price of defeat.
- (2) Necessity for an adequate Army, and in particular, a large Army reserve.
- (3) Manpower and training problems.
- (4) Research and new development.
- (5) Military obligations of citizenship and public relations.
- (6) Opportunity for leadership in the Army through ROTC.

A *major in Military Science and Tactics* is offered by the Army ROTC department. This major is intended to serve two categories: service personnel stationed at nearby military installations who desire

to complete a degree while in the service and college students interested in the possibility of making a career of the service. Students electing this major are required to complete a dual major, the purpose of which is to assure adequate preparation for the future in event they are not selected or cannot qualify for a reserve commission. In this regard it is not possible to qualify for a major in Military Science if the student is not selected for Advanced ROTC. All majors at this institution are acceptable as a dual major but the following are particularly recommended: Engineering, Physics, Chemistry, Mathematics, Political Science, or Psychology. A Freshman student electing Military Science as a major is advised to pursue one of the above fields. In addition, the student should concentrate on filling lower division group requirements including Basic ROTC and strive for a high grade point average.

Enrollment in the second year Basic course is usually authorized only when the student attains sophomore standing.

*Quotas.* There is no quota or restriction for enrollment in the Basic course. At present there is no limiting quota for entrance into the Army ROTC Advanced program.

*Payment to Advanced Students.* Students enrolled in the Advanced course are paid a "Subsistence Allowance" amounting to approximately \$27 per month. These payments normally continue from time of enrollment until completion of the course and include normal vacation periods. Veterans receive this in addition to any payments under the GI Bill.

## 208 USU — Military and Air Science

*Delay of Entry on Active Duty.* Students who complete the Army ROTC program and are commissioned may delay entry upon active duty, if they wish, to continue their studies in certain fields. Information regarding specific fields of study and procedure may be obtained upon request.

### Basic Military Science (MS1 and MS2)

DIRECTOR: MAJOR *Charles R. Clark.*

#### Courses

11. **Military Science I.** Organization of the Army and ROTC, Individual Weapons and Marksmanship, School of the Soldier and Exercise of Command. Two hours drill are required each week during the Fall and Spring course. (2F) **Tilley**
12. **Military Science I.** Individual Weapons and Marksmanship, American Military History. (2W) **Tilley**
13. **Military Science I.** American Military History, School of the Soldier and Exercise of Command. (2S) **Tilley**
21. **Military Science II.** Map Reading, School of the Soldier and Exercise of Command. (2F) **Clark**
22. **Military Science II.** Aerial Photograph Reading, Role of the Army in World Affairs, Crew Served Weapons and Gunnery, School of the Soldier and Exercise of Command. (2W) **Clark**
23. **Military Science II.** Crew Served Weapons and Gunnery, School of the Soldier and Exercise of Command. (2S) **Clark**
24. **Military Science II Special Studies.** This course offers special tutored study to students who have not been able to take Basic Courses at their regular offering time. (2F, W, S) **Clark**

### Advanced Military Science (MS3 and MS4)

DIRECTOR: MAJOR *Lewis A. Cville*

#### Courses

131. **Military Science III.** Leadership, Military Teaching Methods, Organization, Function, and Mission of the Arms and Services, School

of the Soldier and Exercise of Command. Two hours drill required each week during the Fall and Spring course. (3F) **Cville**

132. **Military Science III.** Organization, Function, and Mission of the Arms and Services, Small Unit Tactics. (3W) **Cville**

133. **Military Science III.** Small Unit Tactics, School of the Soldier and Exercise of Command. (3S) **Cville**

141. **Military Science IV.** Operations, School of the Soldier and Exercise of Command. Two hours drill required each week during the Fall and Spring course. (3F) **Mayfield**

142. **Military Science IV.** Operations, Logistics, Military Administration and Personnel Management. (3W) **Mayfield**

143. **Military Science IV.** Military Administration, Service Orientation, School of the Soldier and Exercise of Command. (3S) **Mayfield**

150. **Military Science Summer Camp.** Six weeks practical training at a regular Army post. Attendance at summer camp is required of all advanced military science students. Students attend during the summer following completion of Military Science III. (6S)

174. **Advanced Military Science Seminar Problems.** Prerequisite: Enrollment in or Completion of Advanced Military Science. Credits arranged. (F, W, S) **Staff**

201. **Advanced Military Science Seminar Problems.** Prerequisite: Graduate standing. Credits arranged. (F, W, S) **Black**

### Joint Army-Air Force Courses and Activities

*Sponsor Corps.* A semi-military organization composed of 75 coeds elected to the Corps by popular vote of the Army and Air Force Advanced Cadets. Only freshmen and transfer students who are freshmen or first quarter sophomores may apply to fill annual vacancies.

*ROTC Band.* A Military band under the direction of the College band instructor but governed by the policies of the Departments of Military and Air Science. Students selected for the band will enroll for



Military or Air Science classroom work but drill with the band.

*Pershing Rifles.* The National Society of Pershing Rifles was formed "to foster a spirit of friendship and cooperation among men in the Military Department and to maintain a highly efficient drill company." Company "G," 9th Regiment is located at USU. Pershing Rifles has an Army Platoon and an Air Force Flight and is open to any basic or advanced cadet as long as the number does not exceed sixty basics and seven advanced students.

*Rifle Team.* Established to promote marksmanship among Army and Air Force Cadets. Team competes in several regional and national invitational tournaments.

*Society of American Military Engineers.* A National professional society devoted to discussion, study, and training in problems related to Military Engineering.

## ROTC Band Courses

1B, 2B, 3B. ROTC Band, First Year. (1½F, 1½W, 1½S) Staff  
4B, 5B, 6B, ROTC Band, Second Year. (1½F, 1½W, 1½S) Staff

## Sponsor Corps Courses

51, 52, 53. Military Science Sponsors Drill. A course in leadership organization and drill for women elected to Corps of Sponsors. (1F, 1W, 1S) Staff

54, 55, 56. Military Science Sponsors Drill. (Sophomore) (1F, 1W, 1S) Staff

151, 152, 153. Military Science Sponsors Drill. (Junior) (1F, 1W, 1S) Staff

154, 155, 156. Military Science Sponsors Drill. (Senior) (1F, 1W, 1S) Staff

## Pershing Rifles

37, 38, 39. Pershing Rifle Drill, Freshman. (1F, 1W, 1S) Clark

40, 41, 42. Pershing Rifle Drill, Sophomores. (1F, 1W, 1S) Clark

137, 138, 139. Pershing Rifle Drill, Advanced Cadet Staff. (1F, 1W, 1S) Clark

*Education is guided growth.*



## Department of Air Science

LT. COLONEL BLAIR HALE, PROFESSOR OF AIR SCIENCE.

MAJOR *Robert Angus*, MAJOR *C. G. Krieger*, CAPTAIN *A. E. Rickers*, CAPTAIN *J. R. Shipley*, CAPTAIN *A. O. Singleton*, ASSISTANT PROFESSORS OF AIR SCIENCE.

### Office in Military Science 104

The purpose of the Air Force ROTC program is to prepare young men to serve as officers in the Reserve and Regular components of the Air Force. Designed to supplement college training, the Air Force ROTC course develops the attributes of character, leadership and personality essential to every Air Force officer and citizen of the United States. It is not the purpose of the course to train students in specific fields, but rather to give them a general understanding of the mission of the Air Force, its organization, problems and techniques. In addition, the academic phase of the course develops a background in national and international affairs to aid students to intelligently interpret and evaluate world events.

Since the Air Force is primarily engaged in providing the Air Power of our Armed Forces, most of the students who complete the AFROTC program and are commissioned in the Air Force are required to take flight training after going on active duty. The types of flight training usually expected of graduates are either pilot or navigator-observer. Both courses take approximately one year to

complete. During this training, students receive the pay of a Second Lieutenant (approximately \$5590 per year). Upon completion of flight training, students serve 4 years on active duty with the Air Force. In addition pilot trainees participate in an Air Force ROTC Flight Instruction program prior to graduation. Successful completion of the course enables the cadet to acquire a private pilot's license in light aircraft. The course consists of 36:30 hours of instruction and a CAA examination. Students not qualified for flight training may be enrolled in the advanced AF ROTC provided they qualify in certain specialized fields, such as Electronics, Meteorology, Engineering and Nuclear Physics. A small number of outstanding students may be accepted into the advanced course each year who are neither qualified for flight training nor for the specialized program mentioned above. Students who are classified as veterans under the Universal Military Training act may enroll in the advanced course without regard to qualification for flight or specialized training. All students are commissioned in the Air Force reserve upon graduation. Length of

active duty depends upon the category for which the cadet is qualified. Veterans may request active duty or they may join a reserve unit.

*Structure of the AFROTC Course.* The course is divided into two phases: the basic and the advanced. The basic phase is usually taken during a student's freshman and sophomore years. The advanced is normally taken during the junior and senior years and has, in addition to the normal school work, a summer training period of four weeks. The summer training is taken during the summer between the junior and senior years at an Air Force installation. Students are paid for the cost of travel to and from camp and are paid regular service pay while at camp. Students are granted University credit for summer training.

*Quotas.* There is no quota or restriction for enrollment into the basic phase. A production quota is established yearly by Air Force headquarters for enrollment in the advanced phase. The quota is based on the estimated needs of the Air Force for officers of various skills and stipulates the number that can be commissioned each year.

*Summer Camp.* A four-week summer training period is a required part of the advanced phase. Generally two training periods are offered each summer. Students may choose which camp they desire to attend; however, the summer training must be taken between the junior and senior years. These camps are held at various Air Force bases throughout the country. Students are usually scheduled to attend the camp nearest their home. Most students living in Utah and Idaho attend camps in California, Arizona, Nevada or Washington.

*Veterans.* Veterans are accepted into the AFROTC program without regard to quota spaces. Those veterans who meet the age requirements, physical qualifications and complete the program are commissioned Second Lieutenants in the Air Force Reserve but are not required to serve on active duty. Parts of the basic phase of the program may be waived for military service, however, no portion of the basic phase will be waived which the veteran could take prior to becoming eligible for entrance into the advanced phase.

*High School ROTC.* Because of the difference between the Army and Air Force ROTC programs, no credit in AFROTC is given students who have taken high school ROTC.

*Scheduling.* Cadets must schedule Air Science classes upon their initial enrollment at the University.

*Payment to Advanced Students.* Students enrolled in the advance course are paid a "subsistence allowance" amounting to approximately \$27 per month. These payments normally continue from the time of enrollment until completion of the course and include normal vacation periods. While at summer camp no subsistence is paid, but students receive pay at the rate prescribed for basic airmen plus travel pay to and from camp.

*Flight Training After Graduation.* Flight training is taken after entry on active duty. When a student is selected for entrance into the Advanced Program, he is placed in one of the following categories: Flying, Categories I or IA; Special Training, Category II; General, Category III; and Veteran, Category IV. Those selected for flying

must maintain their qualifications for such training. In addition they are given a final physical examination upon reporting for flight training. They must submit an application for such training soon after beginning their senior year. At the time they graduate from college, they are commissioned in the Air Force reserve and are called to active duty in the Air Force during the next year. Upon going on active duty, the student immediately enters flying school. AFROTC Cadets who reach 27 years of age while still in the program must complete all academic studies and enter flight training before their 28th birthday.

*Flight Training Prior to Graduation.* (FIP) Senior AFROTC Cadets, Category I, are required to participate in flying training while at the University. Training in light aircraft operation includes classroom work in weather, navigation, CAA regulations, radio procedures, pre-flight checks, solos, cross-country flights and a CAA examination. In addition academic credit is granted the cadet.

*Delay of Entry on Active Duty.* Students who complete the AF ROTC Program and receive their commissions may request a delay in call to active duty if they desire to continue their studies toward a Master's or Doctor's degree. The length of the delay depends upon current AFROTC regulations and directives. Students who are slated for flight training, however, must enter such training before reaching their 27th birthday.

*Texts and Uniforms.* All texts and uniforms are furnished at no expense to the student, other than a combination deposit and laboratory fee of \$5. Of this fee, a portion is returned to the student at

the end of the school year, or when he is dropped from the program.

*Air Force Chaplains.* Students who meet special requirements may be commissioned as Chaplains in the Air Force. Selection of these individuals rests with the Chief of Chaplains, United States Air Force, Washington, D.C. Interested persons are urged to contact members of the AFROTC staff for further information.

*Air Force ROTC Library.* A library of Air Force periodicals and publications is maintained for the Air Force ROTC Cadet. Material relative to the Air Force ROTC curriculum is available to the Air Force ROTC Cadet.

*Air Force ROTC Counseling Service.* Air Force ROTC Detachment maintains individual counseling service for the individual cadet. Service is offered primarily in areas concerned with the Air Force ROTC curriculum (Education, study, and leadership).

## Air Science Courses

Two hours drill are required each week during the fall and spring courses.

### Air Science I—First Year Basic

**11. Air Science.** Foundation of Air Power. Includes: Elementary theory of flight, power plants, history of aviation and aviation between WW I and WW II. Course also introduces student to the AFROTC course, the USU program and the regulations which govern cadets. Reasons for the ROTC program and obligations of service are also covered. (2F)

**12. Air Science.** This course consists of two phases. Fundamentals of Global Geography, the first phase, consists of the tools of geography, geography of climate, global geography, geographical basis of power and military geography, especially as related to Air Power. International Tensions and Security Organizations, the second phase, consists of

a study of the factors which contribute to a nation's power and therefore Air Power. Those factors are related to such major sources of world tensions as democracy vs communism, nationalism, colonialism and cultural and economic conflicts. Included in this study are the attempts to reduce world tensions through such organizations as the League of Nations and the United Nations. Modern power alignments, in relation to Air Power, are also studied, i.e., the communist bloc, NATO, and Western Hemispheric organizations. (2W)

**13. Air Science.** A study of Air Power as a military instrument of national security. Aspects covered include: development of Air Power, patterns of modern warfare, characteristics and capabilities of military aviation, roles of military aviation, military aviation as affected by national interests, policies and objectives, planning and accomplishment of the USAF missions, and military aviation in the future. (2S)

## Air Science II—Second Year Basic Air Force

**21. Air Science.** Introduction to Aerial Warfare. This course consists of two phases: Aerial Warfare and Targets and Weapons. Aerial warfare is devoted to the study of the characteristics of the air ocean and their relationship to aerial warfare. Included are the fundamentals underlying warfare, the military contributions to national objectives and the role which air power plays in furthering the objectives of national policy. The second phase, Targets and Weapons, consists of a study of the nature of targets, types of targets, sources of target information and target selection. Study of weapons includes conventional weapons, atomic, nuclear, rocket propulsion, chemical, biological and psychological in relation to weapon types and their effects upon targets. (2F)

**22. Air Science.** Study of the design and characteristics of various types (propeller jet, auxiliary systems, pilotless aircraft) of delivery aircraft in relationship to purposes for which designed. The study of Air Bases includes types of bases, significance of air bases in national defense, and the political, geographic, technical and military problems of air bases. (2W)

**23. Air Science.** Operations. Study of the various types of combat operations such as strategic, theater, air transport and air defense. Included in this study are operational concepts, resources, time and space application, organizational systems, force employment and deployment interdiction, objectives,

war plans, operations plans and relationships of operation to United States Air Policies. (2S)

## Air Science III—First Year Advanced AFROTC Course

**131. Air Science.** This subject consists of three phases: Responsibilities of an Air Force Commander, Communicating in the Air Force and Instructing in the Air Force. Responsibilities of the Air Force Commander concentrates on the functions of a Commander planning, directing, coordinating, organizing and controlling. Functions of a staff officer and organization of the air staff are also covered. Communicating in the Air Force consists of a study of the barriers to effective learning and understanding. Stress is placed on observing, listening and reading as learning techniques and on the importance of writing and speaking skills in the Air Force. Instructing in the Air Force covers principles of learning, personal and professional qualities of instructors, instruction planning, instruction methods, instruction aids, instructional management and evaluation of instruction as pertaining to instructor duties of Air Force Officers. (3F)

**132. Air Science.** This course consists of two phases, creative problem solving and military justice systems. The first twenty-five hours are devoted to the various aspects of creative problem solving. Thought processes, logic, imagination and creative thinking are integrated into the study of such creative problem solving techniques as the scientific research method, the staff study, and individual and group brainstorming. Practical application of techniques is provided through realistic problems of Air Force nature. The Military Justice System, the second phase of the course, involves a study of legal procedures in the Air Force. Rights, duties and responsibilities under the Military Justice System are stressed. Mock court-martials are utilized in presentation of material. (3W)

**133. Air Science.** This course consists of three phases: Weather, Navigation and Air Base Functions. The weather phase of this course is devoted to the study of earth and space, circulation and wind patterns, temperature and heat transfer, pressure, moisture, stability, fog, icing and world weather as it pertains to the Air Force. The Navigation phase is devoted to the study of aeronautical maps and charts, navigational projections, map and chart interpretation, and navigational devices such as navigational computers. Basic navigational problems are integrated into the course. The Air Base Functions



## 214 USU — Military and Air Science

phase consists of a study of the various functional organizations on a typical Air Force base such as personnel services, security, medical services, transportation, supply, flight operations. (3S)

**150. Air Science.** Air Force ROTC Summer Training Unit consists of four weeks (144 contact hours) of practical training. Training is directed toward providing a variety of practical Air Force experiences. Among the experiences offered in tour and lecture form by regular Air Force officers are such subjects as electronic communication, navigation, weather, survival training, air base security, aircraft traffic control, first aid and sanitation supply, biological and chemical warfare. Pressure and altitude chamber experience complete with orientation lectures, as given to regular Air Force jet pilots, permits the cadet to ride in jet aircraft. A minimum of two flights permitted to each cadet — one thirty minute jet ride and one ride on another type aircraft as a crew member. Cadets participate in preflight and post flight briefings, and receive emergency equipment indoctrination. In addition, demonstrations and field trips are provided to airfield installations and nearby aircraft factories, as well as local fire power demonstrations. Practical leadership training is provided through group calisthenics, individual and group sports, weapons familiarization in US pistol and carbine and directing cadet operations. Individual counseling is provided for the cadet in problem areas.

The cadet attends the Summer Training Unit between his junior and senior year. Exemption from attendance at this time is granted only by the Professor of Air Science based upon emergency situations or extreme hardship. If an exemption is granted, the cadet must attend summer training at the end of his senior year. He will be commissioned upon successfully completing the summer training.

### Air Science IV, Second Year Advanced AFROTC Course

**141. Air Science. Leadership and Management Seminar.** Study consists of three phases; principles of leadership, the nature of man, and

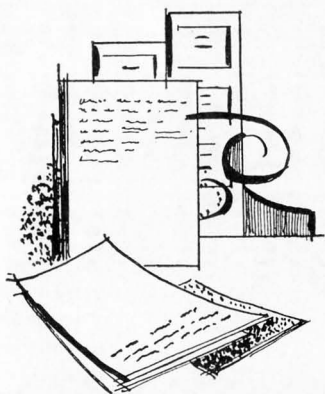
applications in leadership situations. All phases are integrated into Air Force problems in leadership and management areas. Insight and experience in Air Force leadership and management problems is provided through role playing, group and individual problem solving, group discussion and panel discussion. Translation of knowledge into speaking, writing and listening skills is also emphasized. Course is directed toward full development of the individual's leadership potentialities both as an Air Force Officer and a civilian leader. (3F)

**142. Air Science. Military Aspects of World Political Geography.** This course is concerned primarily with the impact of air power on global relations. Air Power is studied in relationship to the framework of international politics (state system, political power, contemporary ideologies, propaganda, regionalism and defensive alliances). Air Power is also related to the factors which influence the power of states. World powers and strategic areas, as pertains to Air Power, are also studied, i.e., The Arctic Areas, USSR, China, The Americas, Middle East, Africa, South and Southeast Asia and the Pacific Defense areas. The implications of atomic power and problems of armament control in the atomic age and in relation to Air Power are included. (3W)

**143. Air Science.** This course consists of two phases; Military Aviation and the Evolution of Warfare consists of a study of the principles of war, basic combat tactics from Hannibal through the Korean Action including history of naval and ground warfare and the future role of Air Power. The second phase, approximately ten hours, is devoted to a briefing for Commissioned Service. (3S)

**145. Flight Instruction Program.** Ground school (35 instruction hours): Covers CAA Regulations, Radio and Airways procedures, navigation, general service and operation of aircraft. Flight school (36½ instruction hours) covers: preflight checks, solos, cross-country flights, and a CAA Examination. Subject open only to qualified senior AFROTC Cadets. Instruction arranged to not interfere with regular academic schedules. (3 hrs arranged)

*Learning is acquiring the right habits to do a specific job.*



## *School of Graduate Studies*

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**J. Stewart Williams, Dean**

## School of Graduates Studies

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# School of Graduate Studies

J. Stewart Williams, Dean

Office in Main 182

There are seven graduate degrees offered at Utah State University: Civil Engineer, Irrigation Engineer, Master of Education, Master of Forestry, Master of Science, Doctor of Education and Doctor of Philosophy.

Graduate study is supervised by the dean of the School of Graduate Studies, assisted by the Graduate Council. This council consists of one representative from each of the seven resident colleges of the University, and one from the Library. Members of the council are nominated by the Faculty Senate and appointed by the president to serve four-year terms, two to be appointed each year.

*The present Graduate Council* is constituted as follows: College of Agriculture, Leonard H. Pollard; College of Business and Social Sciences, Leonard Arrington; College of Education, Arden Frandsen; College of Engineering, Cleve H. Miligan; College of Forest, Range and Wildlife Management, Laurence A. Stoddart; College of Home and Family Living, Ethelwyn B. Wilcox; University College, Eldon J. Gardner; Library, Milton Abrams.

A graduate with a Bachelor's degree from USU or from any other accredited college or university may be admitted to the School of Graduate Studies. Seniors at USU who have an average of "B" or better in their courses in the junior and senior years, and who at the beginning of any quarter lack not more than five credits to complete all requirements for the Bachelor's degree, may be allowed to register

in the School of Graduate Studies.

*An application for admission*, accompanied by transcripts of all previously earned credits, and by letters of recommendation, should be presented as far in advance of the day of registration as possible. You must be approved by the department in which you propose to work.

If you cannot qualify for the degree program in a particular field, you may be admitted to the School of Graduate Studies as a non-candidate student. Admission to this School does not imply admission to candidacy for a higher degree.

## Master of Science Degree and General Graduate Policies

The Master of Science or one of the other Master's degrees is offered in most of the basic biological, physical, and social sciences and in various educational, industrial, and professional divisions of the University. Specific departments in which the Master's degree is given, together with the courses provided by the departments, may be determined by consulting the departmental statements in this catalog.

*Qualifying Examinations.* A qualifying examination is required by the School of Graduate Studies and may be taken prior to registration. If not taken then, this examination and any qualifying examination required by your major department must be taken as soon as possible after registration. The results of

these examinations become a part of your file in the Graduate office. If you are found to be deficient in the work basic to the field in which you propose to study, you may be required to take undergraduate courses—which do not count in the minimum requirements for the Master's degree—to satisfy the deficiency.

*Supervisory Committee.* When it has been determined that you are acceptable as a possible candidate for a higher degree, the major professor will suggest a committee to assist in guiding your program and in conducting necessary additional qualifying examinations and the final examination. When your program has been determined and approved by your committee, you will be advanced to candidacy for a degree. Advancement to candidacy must be accomplished before the end of the winter quarter if you are to graduate at the following Commencement. When your research is best supervised by a federal collaborator, or other person who is not a member of the regular teaching staff, such collaborator or other person may be designated as thesis director. This thesis director is a member of your committee.

*Requirements.* Your program for the Master's degree must include: (1) At least fifteen credits taken on the Logan campus; (2) At least 45 credits in courses numbered 100 or above which are approved for graduate credit; (3) At least ten credits, exclusive of thesis, in courses numbered 200 or above; (4) A thesis with nine to fifteen credits, or thesis alternate as described below.

*Thesis.* As a candidate for a Master's degree you usually must present a thesis on a topic within the field of your major subject, which must represent from nine to fifteen hours of the credit present-

ed for your degree. The thesis must be a contribution to the field of knowledge, based upon your own research or a treatment and presentation of known subject matter from a new point of view. After final approval by the department, the thesis must be typewritten in standard form; and a copy must be submitted to each member of your advisory and examining committee at least two weeks before the date of your final examination. After approval by the committee and the department, and after you have successfully passed the final examination, three copies of the final draft of the thesis must be deposited in the Graduate office. One of these copies will be deposited in the library, another sent to the department, and the third returned to you.

*Microfilming of Thesis.* You pay for microfilming your thesis, and the films are deposited in the University library. For master's candidates, the fee is five cents per page and you may obtain your own positive copy for a small additional charge. For doctor's candidates the fee is \$20 and the film is produced by and registered with University Micro-films, Ann Arbor, Michigan.

*Thesis Alternate.* The supervisory committee may permit the substitution of three advanced reports, valued at six to ten credits, for the regular thesis. These are known as "Plan B" reports. The master's program is otherwise the same under "Plan B."

If you are working under "Plan B" in general agriculture, the dean of the College of Agriculture will select a major professor to be the chairman of your supervisory committee. Your program must include a minimum of six credits each in the fields of Plant Science, Animal Science, and Agricultural Economics.



*Final Examination.* As a candidate for a Master of Science degree you are required to pass a comprehensive final examination on the subjects of your graduate study and on your thesis. This examination may be oral or written or both as your committee decides, and is open to all faculty members and officials of the School of Graduate Studies. Arrangements for the time and place of the examination are made by the dean of the School of Graduate Studies. A member of the advisory and examining committee, other than the major professor, or a representative of the Graduate Council, is appointed to act as chairman of the examination and submits to the Graduate Council the results of the examination. If you are to receive your degree at the June Commencement, the date of the final examination should be not later than May 10.

*Time Limit.* Work for a Master's degree must be completed within six years from the date of matriculation as a regular student in the School of Graduate Studies if the work is done wholly or in part during the regular academic year. If the work is done entirely in summer sessions, a maximum of seven years is allowed. Older work may be revalidated by examination.

*Extension Course Credit.* The amount of extension class or other off-campus credit to be allowed will be determined in consideration of your entire course program. In no case will more than nine quarter hours of extension credit be allowed toward a degree, and the total of all off-campus credit may not exceed fifteen hours, exclusive of thesis. All extension courses for which graduate credit is sought must be regularly registered for through the School of Graduate Studies, and must have the sanction of the head

of the department in which you are doing graduate work. Credit toward a Master's degree is not granted for Home Study (correspondence) Courses.

*Transfer Credit.* A maximum of nine quarter credits of graduate work satisfactorily completed at another approved Graduate School may be allowed toward a Master's degree. The extent to which such credit may reduce either the course or the residence requirements will be determined by your committee.

*Credit Load.* Maximum load for full-time graduate students is sixteen credits. Maximum for assistants engaged in teaching or research is twelve credits.

## Master of Education Degree

The Master of Education Degree is offered in each of the following areas: School Administration and Supervision, Secondary Education, Elementary Education, Agricultural Education, Home Economics Education, Industrial and Technical Education.

The course of study leading to the Master of Education degree in each of the above areas has for its purpose the preparation of thoroughly prepared teachers, supervisors, and administrators. It provides a broad foundation in the field of education and in the particular area of specialization, and differs from the Master of Science degree by providing more flexible requirements to meet your specific needs. This degree emphasizes a proficiency in the interpretation and application of research.

The requirements for the Master of Education degree include: (1) At least 45 credits beyond the Bachelor's degree, subject to the same

limitations of off-campus course credit, transfer credit and time limit as the Master of Science degree; (2) A graduate minor of at least ten credits in a field other than education; (3) Specified courses in each of four areas of the field of education; (4) Possession of a teaching, administrative, supervisory or other appropriate state school certificate; (5) At least three years of successful teaching or administrative experience.

## Master of Forestry Degree

The Master of Forestry degree is given upon completion of a course of study prescribed by the Department of Forest Management within the general requirements of the School of Graduate Studies. It is designed for those who have a Bachelor's degree in some field other than Forestry and who wish to earn a degree in Forestry. It normally requires from two to three years, depending upon how closely your original field is related to Forestry.

## Degrees of Civil Engineer and Irrigation Engineer

The College of Engineering offers a two-year graduate program in Civil Engineering and in Irrigation Engineering, leading to the degrees of Civil Engineer and Irrigation Engineer. The plan of study for these degrees is similar in many respects to plans at other western institutions for degrees of Civil Engineer, Mechanical Engineer, etc.

*Requirements.* The program for these degrees include: (1) A minimum of six quarters of study, of

which at least three quarters must be in residence at Utah State University; (2) Completion of 90 credits of approved courses; (3) Completion of a minimum of 30 credits of graduate courses (200 series), exclusive of thesis; (4) Completion of an adequate thesis based on a research program for which a maximum of 30 credits may be allowed by the committee.

For candidates who present the Master of Science degree in an appropriate field of engineering, and who have completed a thesis project for this degree, the requirements will be modified as follows: (1) A minimum of three quarters in residence; (2) Completion of a suitable program of study of not less than 45 credits, of which: At least 30 credits must be graduate courses (200 series), and may include a maximum of 20 credits for thesis.

The suggested curriculum for these degrees is detailed in the section on College of Engineering.

## Doctor of Education Degree

The degree of Doctor of Education is designed especially to prepare for leadership and expert service in the field of education. Requirements for this degree include the development of competence in an area of specialization in education plus a thorough development of skills and knowledge of the broad field of education and in a field supplementary to professional education.

Essentially the requirements for the Doctor of Education degree are the same as those for the Ph.D. except: (1) Not more than 25 credits may be granted for the thesis; thus more course work is required.

(2) No foreign language is required.

Detailed requirements for the above degrees may be obtained at the office of either the dean of the School of Graduate Studies or the dean of the College of Education.

## Doctor of Philosophy Degree

The degree of Doctor of Philosophy (Ph.D.) is awarded by Utah State University in recognition of high attainment and productive scholarship in a specific field of learning.

*Majors Offered.* The Doctor of Philosophy degree is offered in: Agricultural Engineering, Agronomy, Animal Husbandry, Bacteriology, Biochemistry and Nutrition, Botany, Chemistry, Civil Engineering, Entomology, Horticulture, Irrigation and Drainage Engineering, Irrigation Science, Physics, Range Management, Sociology, Wildlife Management, and Zoology.

Admission to School of Graduate Studies to work toward the degree of Doctor of Philosophy is obtained in the same manner as for the Master's degree. Qualifying examinations are similarly required, and your program is likewise directed by a supervisory committee.

*Requirements.* The program for the Doctor of Philosophy degree must include: (1) Three years of full-time graduate study above the Bachelor's degree. If the student has a Master's degree, then two years will be required. The student's supervisory committee may recommend that part of this program be taken at other schools, but the last year must be spent in residence at Utah State University; (2) A minimum of 135 credits of approved graduate study beyond the

Bachelor's degree; (3) A major field to which approximately two-thirds of the time is devoted and a minor. The minor may be divided between two suitably related areas. A Master's degree in a suitably related area may satisfy the minor requirement; (4) A research problem on which a thesis will be presented. Credits for this thesis may not exceed 45, and work on the thesis should ordinarily occupy most of the third year, but may be carried on with course work throughout the program.

*Language Requirement.* A reading knowledge of at least one foreign language is required. The particular language required will be that which best meets your needs. Requirements of a second language will be optional with the department in which you take your major. Your proficiency in using the required language in your chosen field and your knowledge of the grammar structure of the language will be determined by a committee appointed by the dean of the School of Graduate Studies from members of the Languages department. The language examination should be taken before the beginning of the third year of study.

*Comprehensive Examination and Candidacy.* Written and oral examinations are conducted by the supervisory committee and the department concerned, usually in the last quarter of the second year of your work, to determine your fitness for admission to candidacy for the degree of Doctor of Philosophy.

*Thesis.* A completed dissertation approved by the department must be presented to the supervisory committee not later than May 1 of the year in which you would graduate. The dissertation must show ability to do critical and independ-

ent research. It must present a contribution to knowledge in scholarly fashion.

*Final Examination.* The final ex-

amination in defense of your thesis will be conducted by the supervisory committee not later than two weeks before the date of commencement.

## Inter-Departmental Curriculum in Nutrition and Biochemistry

ANIMAL NUTRITION, *L. E. Harris, J. E. Butcher, J. C. Street*; BIOCHEMISTRY AND PHARMACOLOGY, *D. A. Greenwood*; BIOCHEMISTRY, *H. O. Van Orden*; DAIRY NUTRITION, *G. E. Stoddard*; HUMAN NUTRITION, *E. B. Wilcox*; POULTRY NUTRITION, *C. I. Draper, J. O. Anderson*.

All the resources of the University related to work in this area are made available to staff members and students engaged in research in biochemistry and nutrition. These include the metabolism laboratory with unique facilities for conducting simultaneous digestion and metabolism studies on numerous large animals; an electron microscope, spectrograph, ultracentrifuge, tiseluis apparatus and gas chromatographic equipment

Major problems currently being studied are affects of toxic and non-toxic substances on digestion and metabolism of farm animals, atmospheric pollution, nutritional status of population groups, and basic physiological processes related to nutrition.

Fellowships with stipends from \$1200 to \$4800 are available.

Through this program you are trained for research in educational institutions, governmental and industrial laboratories, or for college teaching.

*Prerequisites for a major* in this area will include one year or equivalent training in English, General Chemistry (including Qualitative Analysis, Analytical, Organic Chemistry), Mathematics through Integration Calculus, and Physics. Basic

courses in Bacteriology, Botany, Physiology, and Zoology are required. Appropriate minors are Mathematics and Statistics, Chemistry, Physics, Physiology, Genetics, and other fields closely related to the major. You attend and participate in the area seminar.

Master's Degree	Credits
1. One year biochemistry .....	12
2. One year nutrition .....	12
3. Statistics and animal diseases .....	12
4. Elective and research .....	10
Total .....	46

Doctor's Degree	
The following in addition to the master's degree curriculum:	
1. One year advanced nutrition .....	15
2. Advanced biochemistry .....	15
3. Advanced chemistry, statistics, mathematics or physics .....	10
4. Advanced zoology—(genetics, physiology, histology) .....	15
5. Advanced bacteriology, anatomy, and pathology .....	10
6. Electives and thesis .....	25
Total .....	90

The curriculum is supervised by a committee consisting of Professors Greenwood, chairman; Harris, Anderson, Stoddard, Van Orden, Wilcox, and James Bennett. Chairmanship rotates.

## Teaching and Research Assistantships

A number of teaching and research assistantships in various departments of the University are available each year to graduate students. Teaching assistantships carry a stipend of \$900 to \$1400 for one-third teaching service on a nine-month basis. Remuneration for research assistantships may vary from \$900 to \$2400, depending upon the time of service involved. Generally assistantships are arranged to allow you to complete work for your Master's degree in two years.

At present, assistantships are available in the following departments: Animal Husbandry, Accounting and Business Administration, Agricultural Economics and Marketing, Agronomy, Art, Bacteriology and Public Health, Botany and Plant Pathology, Chemistry, Family Living and Child Development, Civil Engineering, Dairy

Industry, Economics, Education, English, Entomology, Forest Management, Foods and Nutrition, Geology, Horticulture, History, Irrigation and Drainage, Instrumental Music, Mathematics, Modern Languages, Physiology, Physics, Physical Education, Psychology, Range Management, Sociology, Speech, Vegetable Crops, Veterinary Science, Wildlife Management, and Zoology. Research fellowships are available in: Animal Husbandry, Agricultural Economics and Marketing, Agronomy, Chemistry, Entomology, Irrigation and Drainage, Physiology, Range Management, Wildlife Management, and Zoology.

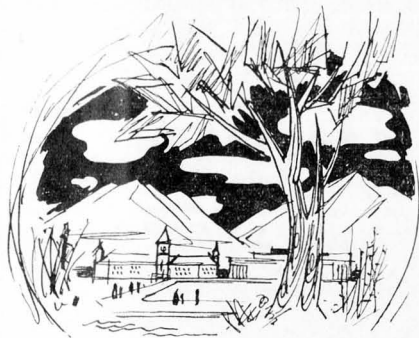
## Tuition Scholarships

A number of tuition scholarships are available to beginning graduate students who are residents of Utah. Applications should be made to the dean, School of Graduate Studies. (Also, see catalog section on Scholarships.)

*Education is an investment in your happiness and in America's security.*



*The bond linking home, school  
and community—the responsiveness  
of each to the needs of the other—  
is a precious asset of American  
education.*



*University Summer School and  
Division of Off-Campus  
Education*



Lee Grande Noble, Director

## University Summer School and Division of Off-Campus Education

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# Summer School

L. G. Noble, Director  
Office in Main 130

Utah State University has an attractive program of educational offerings. Beautiful Cache Valley and its environs offer an opportunity for teachers and others to obtain professional improvement and enjoy vacation facilities unsurpassed on any University campus in America.

Utah State Summer School makes available the services of leading educators of the nation and members of the resident University faculty. This policy has made it possible to build in the intermountain area a Summer School of national significance.

*A quarter's work is offered in the two five-week sessions* of the Summer School. Nearly all departments of the University offer selected courses to meet the various needs of individuals and groups. Most of the courses are scheduled for two-, five- or ten-week periods. The offerings are arranged to meet certification requirements of teachers, graduate work for those who seek advanced degrees, to satisfy the needs of incoming high school graduates and regular University students.

*Special consideration is given to school administrators, teachers, and specialists in the several fields of public education.* Increasing numbers of regular students also are continuing their education during the summer quarter. Many high school students register for Summer School following graduation, rather than postpone entrance un-

til the fall quarter. Former military personnel who are receiving government aid are especially interested in a regular summer quarter program.

*Special lectures, lyceum numbers in music and drama, canyon parties, steak fries, and sight-seeing tours* are a regularly scheduled part of the Summer School program.

As a Summer School student you are allowed seven years in which to satisfy requirements for the Master of Science degree. One quarter's work may be completed in the two five-week terms of Summer School. Graduate students may obtain a Master's degree by registering for three full Summer School quarters, not necessarily consecutive. If you expect to register for work leading to an advanced degree you should submit your courses to the dean of the School of Graduate Studies several weeks in advance of registration and indicate the department in which you wish to major. This procedure will make it possible to have a course of study approved before the Summer School registration date.

The annual Summer School catalog, containing detailed announcements of course offerings and related information, is available upon request at the Office of the director of Summer School, Utah State University, Logan.

(Please see Catalog page 270 for list of Summer School special events.)

# Division of Off-Campus Education

L. G. Noble, Director  
Office in Main 130

A large number of people living in communities or areas remote from the University campus desire to benefit from university training, but cannot come to the home campus to register for resident courses. For this group, the Division of Off-Campus Education of Utah State provides a liberal program of edu-

cational offerings, including Off-Campus resident classes, Home Study and a number of other educational services. The program of the Division Of Off-Campus Education is fully accredited by the National University Extension Association.

## Off-Campus (Extension) Classes

Organized courses in many departments of Utah State are offered in selected resident centers of the state for groups of people who cannot come to the home campus at Logan. Such courses are designated as *Off-Campus Classes*. They carry resident credit, are equivalent in content, hours of class instruction and preparation and otherwise meet the same pre-requisites as comparable classes on campus.

Except for the "fifteen hours of on-campus rule," Off-Campus classes may meet the requirements for a Bachelor's degree. Off-Campus classes are also accepted to meet requirements for a Master's degree,

with approval of the School of Graduate Studies.

All instructors in Off-Campus courses are either members of the regular University teaching faculty officially assigned to the teaching project concerned, or non-resident members appointed by the head of the department, with the approval of the dean concerned, and the University administration.

The registration fees charged for Off-Campus classes conform to the prevailing regulations fixed by the Board of Trustees. For additional information contact the Director of Division Of Off-Campus Education, Utah State University, Logan.

## Home Study (Correspondence)

Many individuals desire organized, systematic instruction, but live in isolated areas or for other reasons cannot or do not care to meet for class instruction on the University campus or its resident centers. For such individuals, the Home Study Division provides a liberal offering through a wide

variety of courses in many of the departments of the University. This program furnishes an excellent opportunity to students of high school or college level, and to adults generally, who desire education and professional improvement in selected fields.

You must be at least 19 years of



age, or submit fifteen units of high school work, or be a graduate of a high school for admission to Home Study courses of college grade.

One-fourth of the credits necessary for a Bachelor's degree (45) may be earned through the Home Study Division. Each college of the University, subject to faculty approval, determines the nature and the amount of home study credit accepted for admission and graduation. In no case is more than 25 per cent of the total number of credit hours accepted for graduation Home Study credit.

**Graduation Deadline.** Seniors who plan to apply home study credits toward graduation, in any one year, must have their courses completed by May 1, so that lessons and examination may be evaluated and credit filed in the Registrar's Office two weeks prior to the day of graduation.

**U.S.A.F.I. Courses.** USU's Home Study Division is cooperating with the United States Armed Forces Institute (U.S.A.F.I.) at Madison, Wisconsin, by providing Home Study courses at a reduced cost to men and women on active service in the Army, Navy, Air Force, Marine Corps, or Coast Guard. A member of any one of the armed forces desiring to enroll for Home Study courses should contact the education and information center at the base where he is located. If you need further information, you may write directly to Home Study Division, Utah State University, Logan.

**Veterans.** The Utah State University is approved by the Veterans Administration to offer Home Study courses under the G. I. Bill of Rights. If you desire Home Study courses you should first contact your local Veterans Administration

regional office and determine whether you are still eligible to continue schooling under the G. I. benefits, and if so, determine what procedures you must follow.

**Fees.** A fee of \$5 per credit hour is charged for Home Study courses of college level. High School course fees are \$15 per unit and \$10 per half-unit. All fees are subject to change.

**Home Study Catalog.** If you are interested in Home Study courses, request a Home Study Catalog, which contains full information concerning this program.

## Home Study Courses

**Course Offerings.** Courses offered by the Home Study Division include the following, descriptions of which are given in this catalog under the departments concerned:

**Accounting:** 1., 2. Introductory Accounting; 12. Social Security and Payroll Accounting; 111. Cost Accounting.

**Agricultural Economics:** 53. Principles of Agricultural Economics; 62. Principles of Marketing; 105. Agricultural Credit; 113. Farm Cooperatives.

**Agronomy and Soils:** 1. General Farm Crops; 56. Introductory Soils.

**Animal Husbandry:** 10. Feeds and Feeding; 15. Fundamentals of Animal Breeding; 110. Beef Production; 120. Swine Production; 125. Sheep Production.

**Art (Visual Arts):** 1. Exploring Art; 2., 3., 4. Art History; 5. Beginning Design; 6. Advanced Design; 8. Basic Drawing; 14. Introduction to Painting; 50. Art Methods for Young Children; 105. Advanced Drawing and Composition; 106. Perspective and Rendering; 111. Water Color Painting; 140. Applied Interior Design; 141. Advanced Problems in Interior Design; 151. Art Methods for Elementary Grades.

**Bacteriology and Public Health:** 10. Elementary Bacteriology; 15. Personal Health; 155. School Health.

**Business Administration:** 20. Problems of Small Business; 157. Retail Advertising; 161.-162. Problems in Retail Distribution.

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**Dairy Husbandry:** 109. Dairy Production.

**Economics:** 51. General Economics; 52. Economic Problems; 125. Trade-Unionism and Collective Bargaining; 150. Comparative Economic Systems; 155. Principles of Taxation; 170. Economic Development of the United States.

**Education:** 3. 4-H Club Leadership; 103. Principles of Elementary Education; 104. Elementary School Curriculum; 107. The Teaching of Reading; 108. Social Studies in the Public Schools; 111. Principles of Secondary Education; 113. Guidance and Personnel; 114. The Organization and Administration of Education; 127. Secondary School Methods; 138. Improvement of Teaching in Secondary Schools; 141. Social Foundations of Education; 182. History of Education.

**English:** 1., 2., 3. Basic Communication; 4. Elementary Grammar; 12. Practice in Composition; 33. Readings in the Short Story; 37. Readings in the Novel; 40. World Literature; 41. World Literature; 42. Readings in Mythology; 53. American Literature—Early Period; 54. American Literature — Later Period; 58. Modern American Literature; 60. English Literature; 61. English Literature; 68. Modern English Literature; 104. Advanced Grammar; 110. Advanced Composition; 117a. Creative Writing; 117b. Creative Writing; 117c. Creative Writing; 122. Children's Literature; 123. Literature for Adolescents; 149. Comparative Literature; 150. American Poetry; 151. American Fiction; 169. Readings in World Drama From Ibsen to the Present; 190. Romantic Period; 191. The Victorian Period.

**Health, Physical Education, and Recreation:** 80. Nature and Function of Play; 85. Organization of Intramural Sports; 97. Body Dynamics; 135. Safety Education.

**History and P. Science:** 13. Early United States History; 14. Modern United States History; 34. English History; 120. Modern European History; 127. Modern European History; 128. Twentieth Century World.

**Political Science:** 10. American National Government; 15. American State and Local Government; 70. Comparative European Governments; 101. American Foreign Policy; 102. International Political Relations; 111. International Organization; 126. Soviet Government and Politics; 129. Public Administration.

**Home Economics:** 5. Principles of Nutrition; 26. Food for the Family; 149. Home Management; 155. Family Finance.

**Horticulture and Vegetable Crops:** 1. Elementary Pomology.

**Vegetable Crops:** 4. Vegetable Crops.

**Irrigation and Drainage:** AE 10. Irrigation Practices; CE 143. Irrigation Principles.

**Landscape Architecture:** 3. Elements of Landscape Architecture.

**Library:** 100. Reference Materials and Bibliography; 120. First Quarter Cataloging and Classification; 150. School Library Administration; 155. Book Selection.

**Mathematics:** 33. Solid Geometry; 34. Introduction to College Algebra; 35. College Algebra; 44. Plane Trigonometry; 46. Plane and Spherical Trigonometry.

**Mechanical Engineering:** 61. Engineering Drawing; 62. Engineering Drawing.

**Psychology:** 53. Elementary General Psychology; 102. Educational Psychology for Secondary Teachers; 105. Child Psychology; 108. Educational Psychology for Elementary Teachers.

**Secretarial Science:** 30. Business Communications; 75. Elementary Shorthand; 41. First-Quarter Typewriting; 42. Business Typewriting; 43. Secretarial Typewriting; 94. Key-driven Calculator; 175. Office Management.

**Sociology:** 10 Rural Sociology; 70. Introductory Sociology; 161. Modern Social Problems.

**Zoology, Entomology and Physiology**

**Zoology:** 1. Principles of Biology.

**Entomology:** 8. Insects Affecting Man; 21.

**Social Life of Honey Bees.**

**Physiology:** 4. Human Physiology.

### HIGH SCHOOL COURSES

**Biology:** 71. Biology.

**Economics:** 66. Consumer Economics.

**English:** 11. Sophomore English; 12. Junior English; 13. Senior English.

**Geography:** 63. Geography.

**History:** 64. United States History; 65. World History.

**Mathematics:** 41. Mathematics; 42. Plane Geometry; 43. Solid Mensuration.

**Social Sciences:** 61. American Government; 62. American Problems.

## Travel-Study Tours

The Division Of Off-Campus Education conducts each year travel-study tours to Mexico and other foreign countries, with or without credit. The instructor in charge of the tour is a regular faculty member, or some other individual approved by the head of the department and the dean concerned. You may earn as many as three to nine credit-hours for work done in connection with such a tour.

If interested in a study tour contact Division Of Off-Campus Education, Utah State University, well in advance of the close of the academic school year and in advance of the date the tour begins, in order to meet specific assignments which are made by the department offering the credit. As applicant for a study tour you will need to cooperate with the head of the department in which credit is desired.

## Special Adult Education Services

The Division Of Off-Campus Education offers a number of special

services for adults in the field of education, including the following:

*Faculty-Speaker Service.* The University provides a *faculty speaker* service for commencement exercises, teacher institutes, parent-teacher meetings, service organizations, and other adult groups which are concerned primarily with problems in education. Copies of the *Faculty Speaker Service Brochure* may be had by writing to the Director of the Division Of Off-Campus Education, Utah State University, Logan.

*University Lecture Series.* The Division Of Off-Campus Education provides each year a special lecture series dealing with such topics as the Great Religions, International Problems, and Current Problems in Education.

*Conferences and Institutes.* The University cooperates with teachers, administrators, and boards of education in planning educational conferences and institutes in connection with in-service teacher, parent-teacher, and other group organization improvement programs.

(Please see list of Conferences and Institutes on pages 268-270.)

*Our great concern for what is, should not overshadow what ought to be.*

*Leadership through sacrifice ac-  
complishes more than leadership  
through power*



J. Elliott Cameron, Director  
Snow College, Ephraim

## *Branch Colleges*



Royden C. Braithwaite, Director  
College of Southern Utah, Cedar City



# Branch Colleges

## College of Southern Utah

Daryl Chase, President

Royden C. Braithwaite, Director

The College of Southern Utah has become identified as one of the significant contributors to the state's program of higher education. Its clearly defined goals and objectives, its provisions for a liberal and practical education, and its vital force for progress throughout the entire state warrant ready acknowledgment.

The people of Cedar City and Southern Utah are proud of the College. They look to it for leadership in education, problem solution, and for the promotion and maintenance of the highest quality of cultural, recreational and aesthetic activities. They emphasize this pride in active support of the College programs through numerous scholarships and gifts of materials and properties.

The College well justifies the high regard with which it is held by community, state and professional colleagues. Through the years on limited budgets its high professional goals and standards have set an example for small colleges in the state.

Every faculty member is engaged in resident teaching, student counseling, and shares responsibility for the direction of out-of-classroom experiences of students. Several faculty members cooperate in the planning and execution of research projects supervised by the Utah

Agricultural Experiment Station. Many faculty members also participate in the programs of the Utah Cooperative Extension Service.

The cooperative relationships between faculty and administrative personnel of the other institutions comprising the University family have been helpful and profitable. Whole-hearted cooperation with the staffs of other institutions at all educational levels also has been most rewarding. Deans of the parent institution, USU, supervise the work of corresponding departments at both CSU and Snow.

Notable achievements have been made in the area of curriculum improvement at CSU. There has been a reduction in duplicating and overlapping courses, a re-organization and enrichment of course content. An effective coordination of course and graduation requirements of the College has been achieved with other institutions of higher education to which students transfer. Distinctive particularly is the general education program designed to meet the personal needs of all the students, confronted as they are today by the crucial challenges of our complex society.

The vision and sacrifice of the founders of the College of Southern Utah and its administrators and staffs have provided ample land for campus, range and farm

purposes. These heroic workers, in cooperation with citizens of the community and in the state legislature, have enhanced these lands with twenty educational and utility buildings, and residences.

CSU has a large campus in Cedar City on which all the academic work is centered. In addition the college operates a 3,000-acre summer ranch for sheep and cattle herds and a valley farm where practical instruction in agriculture and livestock is centered.

CSU was founded in 1897. It was first called the Branch Normal School of the University of Utah. With the growing need in southern Utah for agricultural development, a change of administration at the parent institution was effected in 1913, and the school then became a branch of Utah State University.

In 1953 the Board of Trustees authorized the name change to College of Southern Utah.

Eleven men have served as heads of CSU since its founding. The first four were known as principals: Milton Bennion, appointed in 1897; J. Reuben Clark, Jr., 1900; Nathan T. Porter, 1901; George W. Decker, 1904. The remaining six men have been titled directors: Roy F. Homer, 1913; P. V. Cardon, 1921; J. Howard Maughan, 1922; Henry Oberhansley, 1929; H. Wayne Driggs, 1945; Daryl Chase, 1951. Dr. Royden Braithwaite has been director since January 1955.

In 1948-49 courses leading to the bachelor's degree in elementary education were authorized by the Board of Trustees. The first regular summer school of the College was held in 1949.

## Snow College

Daryl Chase, President

J. Elliot Cameron, Director

Snow College, the oldest two-year college in the West, endeavors to provide educational and cultural leadership in the communities which surround it in south central Utah.

Its curriculum is designed to meet needs of students and of communities which it serves, and is flexible enough to adjust to the needs of the university preparatory student or the vocational youth who wishes training in many of the terminal courses which it offers. Thousands have felt its influence.

The recent months have been marked by an extensive program of building repair and renovation

and a general face-lifting of campus facilities. Included in this face-lifting was complete landscaping of some areas and the planting of hundreds of shrubs and trees. The beautification and remodeling program was planned to make operation of the educational program more efficient and economic.

Enrollment at Snow recently reached a new high, with an increase of 28.9 percent over the previous year in college level students.

Two memorial funds were recently established: one by the family of the late R. C. Armstrong, former member of the Board of

Trustees, and one by the family of Rodney Christensen, Snow College patron from Ephraim.

Additional property to enlarge the campus has been received through the acquisition of property immediately north of the campus, and by the acquisition of additional property adjacent to the housing area on the south of the campus.

The Snow College Library has been enriched with the acquisition of the law library of the late Mr. A. W. Jensen, and the educational library of the late Miss Mary Nielson.

In addition to the regular program of studies, a complete program of student activities is conducted by the students and faculty of the College. The athletic teams, although not winning honors in the won-lost column, received many commendations for sportsmanship and clean play and for their gentlemanly conduct, not only on the playing field but also from the general public where the boys were seen in action.

The future of Snow College appears to be very bright and staff

and alumni are facing the future with renewed enthusiasm.

Sanpete Stake Academy, founded in 1888 at Ephraim by the Church of Jesus Christ of Latter-day Saints, was first an elementary school. High school work was added in 1895. After normal studies were added as a fifth year in 1912, the institution became known as Snow Normal College. It became a junior college in 1922 and since then has been called Snow College. It was made a state junior college in 1932 and a branch of Utah State University July 1, 1951.

The College plant includes the main campus, the athletic field, the college farm, dormitory and other housing units.

Administrators of the school have been: Alma Greenwood, appointed in 1888; George C. Christensen, 1891; Newton E. Noyes, 1892; Wayne B. Hales, 1921; Milton H. Knudsen, 1924; I. Owen Horsfall, 1933; James A. Nuttall, 1936; Lester B. Whetten, 1953. J. Elliot Cameron has been director since July 1, 1956.

*Man must teach himself that the basest of all things is to be afraid.*



## *Student Services and Activities*



E. H. Himes, Director

## Student Services and Activities

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# Student Services and Activities

DIRECTOR *E. H. Himes*; ACTING REGISTRAR *A. L. Beecher*; ACTIVITIES ADVISER *G. Sherratt*; ADMISSIONS COUNSELOR *T. B. Waddoups*; CHAIRMAN, ORIENTATION ACTIVITIES, *D. Lewis*; CHAIRMAN, SCHOLARSHIPS, AWARDS, AND HONORS *W. E. Mortimer*; CHAIRMAN, STUDENT EMPLOYMENT PLACEMENT *J. Condie*; CHAIRMAN, STUDENT HEALTH SERVICES *B. Preston*; CHAIRMAN STUDENT LOANS *W. Tezak*; COORDINATOR OF STUDENT ACTIVITIES *E. Stevenson*; COORDINATOR OF COUNSELING SERVICES *E. W. Wright*; COORDINATOR OF STUDENT HOUSING *W. W. Skidmore*; FOREIGN STUDENT ADVISER *G. Meyer*; WOMEN'S ACTIVITIES COUNSELOR *H. M. Johnson*.

## Office in Main 133

The program of student services is designed to assist you in becoming effectively adjusted to University life. It is so organized and coordinated with the academic offerings as to become an integral part of the broad educational program of the institution. Features of the program include: high school cooperation; admissions counseling; orientation activities; registration and records; personalized advisement and counseling services; directed organization activity; health services; supervised campus and off-campus living arrangements; financial aids in the form of scholarships, awards, grants-in-aid and loans; employment placement for part-time and graduate needs; special assistance to students from outside the United States; opportunities for meeting religious needs and development.

The administration and coordination of the entire program of student services is the responsibility of the Director. Each of the various services is under the direction of specialists and qualified faculty members who have been carefully selected to consider each student in reference to his or her particular needs.

The Office of Student Services

invites inquiry from prospective students and those on campus who wish to obtain information and assistance with personal needs or out-of-class activities.

## Religion

The officers of Utah State University are deeply interested in the spiritual and moral growth of all students. Every student is encouraged to affiliate with the church of his choice immediately upon registering at the institution.

Outstanding religious leaders of the Latter-day Saint, Protestant and Catholic faiths cooperate with the University in serving the students of their respective churches. Accredited courses in religion are also offered by scholars representing each of these groups.

The largest religious institute in the LDS church is conducted adjacent to the campus. Other religious groups meet students in the local churches of the community.

## Housing

(Costs subject to revision)

Residents must be regularly enrolled students at Utah State University.

**Supervised Living Accommodations for Single Women**

*All freshman women not living at home must live in University-supervised housing.* In rare instances, special permission may be granted by the Women's Activities Counselor to live with other close relatives when a letter of explanation is written by the parent or guardian of the freshman woman at least one month before the opening of school.

*Four New Apartment-Living Residence Halls* will accommodate 426 women, six to an apartment. Accommodations consist of combination living-room-kitchen, bath, and 3 bedrooms. Living-room-kitchen is equipped with electric refrigerator, electric range, table, chairs, and draperies. Cooking utensils, dishes, towels, linens, irons, ironing boards, and all other personal effects are to be furnished by the renters. Cost of electricity consumed in the apartment is shared by the occupants. Telephones may be installed if desired, also on a share-the-expense basis. Rent is \$70.00 per person per quarter. Living rooms, recreation and sewing rooms, sundecks, and laundry rooms are shared. Ample storage space is provided.

*One Conventional Board and Room Residence Hall* will accommodate 100 women. Linen changes, bedding, and desk lamps are furnished. Towels and other personal effects are not furnished. An average cost of \$210.00 per quarter covers board and room charges. Twenty meals per week are provided in the Student Union Cafeteria.

*Cooperative Houses* on campus provide for excellent group living experience for 22 upper-class stu-

dents who share living expenses and housework. An average cost for rent including heat and water is \$50.00 per person per quarter. Other utilities are not provided.

*Sorority Houses* provide board and room for their members and are managed by their own officers. Each has a mature housemother in a supervisory capacity approved by the Office of Student Services. Rates are determined by the house manager and compare favorably with other living rates on campus.

**Supervised Living Accommodations for Single Men**

*One New Apartment-Living Residence Hall* will accommodate 144 men, 6 to an apartment. Accommodations consist of combination living-room-kitchen, bath, and 3 bedrooms. Living-room-kitchen is equipped with electric refrigerator, electric range, table, chairs, and draperies. Cooking utensils, dishes, towels, linens, irons, ironing boards, and all other personal effects are to be furnished by the renters. Cost of electricity consumed in the apartment is shared by the occupants. Rent is \$70.00 per person per quarter. Living rooms, recreation rooms, laundry rooms are shared. Ample storage is provided.

*One New Conventional Board and Room Residence Hall* will accommodate 360 men. A dwelling unit provides for 8 men, 2 to a bedroom. Twenty meals per week are provided in the Student Union Cafeteria. Linen changes, bedding, and desk lamps are furnished. Towels and other personal effects are not furnished. A cost of \$210.00 per person per quarter covers board and room charges.

*Fraternity Houses* provide board and room for their members and are managed by their own officers.

Rates are determined by the house management and compare favorably with other living rates on campus.

### Living Accommodations for Married Students

*University Apartments.* (Prefabricated Units) 304 in number, located on the east fringe of the campus are within easy walking distance of the Campus proper. They are combination living-room-kitchen-study arrangements with bedroom, bathroom and clothes closets. These units can be rented furnished, unfurnished, or partly furnished with rent ranging from \$30 to \$32 per month. Electricity, cooking utensils, bedding, electric refrigerators, washing machines, dishes, window curtains, and other personal effects are not furnished. Apartments are provided with centralized hot air space heat, and an electric rangette for cooking. A central laundry room is available to each set of 28 apartments.

*University Trailer Court,* located on the corner of 12th East and 7th North, three blocks east of the campus proper, provides 32 modern trailer connections to sewer and water mains. Parking space is hard surfaced. A utility house provides laundry space, also rest rooms and individual shower stalls. The University provides coin metered clothes washing machines and dryers. No provision is made for use of privately-owned laundry equipment. Monthly space rental per trailer home is \$15 to \$17.50.

### Off-Campus Housing

The Office of Student Housing maintains lists of accommodations for students in private homes. Many apartments, rooms, board and room, and batching quarters are available in the community. In

each instance the final arrangements must be made with the landlord. Rates are determined by the accommodations offered and range from \$50 to \$60 per month for board and room, \$15 to \$25 per month for a single room, and \$30 to \$60 per month for apartments.

### Application for Housing

Prospective students are invited to direct their applications and inquiries to Coordinator of Student Housing, Utah State University, Logan, Utah. A \$10.00 application fee is required when applying for University-owned housing. Students desiring off-campus housing may procure the current housing list upon arrival at the University, Room 133, Main Building.

### Regulations and Procedures in Housing

Students living in private housing are obligated to retain their accommodations for at least one quarter. Rents are payable in advance. A two-weeks prior notice of intent to vacate should be made with the householder whenever a student intends to vacate a living accommodation. Students living in University owned residence halls agree by written contract to retain their accommodations for the academic year. Rents are payable in advance. Accounts become delinquent 10 days after scheduled payment. A penalty of \$1.00 late fee plus 10c per day thereafter is imposed. The \$10 fee is forfeited for failure to comply with a two-weeks prior "Notice of Intent to Vacate." Cancellation of reservations to occupy a University owned facility must be two weeks preceding the beginning of any quarter. Refunds are not allowable beyond that time.

Dogs, cats or other similar pets are strictly forbidden within the University Housing area. Very few private home owners permit pets.

## Food Services

Food service is obtainable in the University Cafeteria located in the Student Union Building on campus. Monday through Friday schedules and approximate costs are: Breakfast 7:30-8:15 a.m., 40-55c; Lunch, 11:30 a.m.-1:00 p.m., 50-75c; Dinner, 5:30 p.m.-6:30 p.m., 60-85c. Saturdays and Sundays, Breakfast 9:00-9:30 a.m., Lunch, 12:00 p.m.-1:00 p.m. The snack bar operates 8:00 a.m.-10:00 p.m., Mondays through Fridays and 12:00 to 11:30 p.m. Saturdays.

## Awards, Honors, Scholarships and Grants-in-Aid

The University offers a variety of scholarships and awards. Some of these are actual money grants in varying amounts, others provide for registration and tuition fees to be waived. The latter kind generally come under the classification of tuition scholarships.

The primary purpose of the tuition scholarships is to assist new students who have high scholarship and financial need in becoming established in college. These scholarships are discussed in greater detail under the section of Scholarships and Grants-in-Aid.

Most of the scholarships which consist of actual money grants are reserved for students who have been attending Utah State University for at least one year and preferably two years or more. These are usually given at the Awards and

Honors Convocation which is held early in May of each year. Students who are interested in applying for scholarships and other awards may obtain information from the office of Student Services, Room 133, Main Building. Closing dates for receiving applications are announced well in advance of such dates.

### Awards and Honors

(Presented principally to students already enrolled)

**The Johansen Scholarship Fund** of \$5,000, a gift of the late Mrs. Johana Johansen, provides scholarships annually, worth in the aggregate from \$125 to \$150, for help of worthy students of Junior and Senior rank.

**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.

**KSL Meritorious Scholarships.** KSL awards two scholarships, one in Electrical Engineering and one in script writing or broadcasting.

**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 and must be accompanied by an approved outline of a proposed study project to be completed during the senior year. Two copies of the complete thesis are to be filed in the University library.

**Rhodes Scholarships.** Candidates for Rhodes Scholarships at Oxford University, England, are selected each year from Utah. High scholarship and some definite quality of distinction, whether in intellect, character, or personality, or in any combination of these, are the most important requirements. The present value of the scholarship is £500. Seniors or graduate students are generally chosen as candidates. It is suggested, however, that students would do well to be preparing for the candidacy in earlier years. Information and application blanks may be obtained from the University representative, Rhodes Scholarship Committee.

**Institute of Radio Engineers Award.** This award is made each year to the outstanding senior Electrical Engineer and IRE student member. The award consists of one year's dues as associate member of IRE and a certificate of achievement.

**West Coast Electronics Manufacturers Association Scholarship Awards.** Several WCEMA awards of \$200 each are made each year to

Junior and/or sophomore Electrical Engineering students based on high scholarship and need.

**First Security Foundation.** Two scholarships of \$500 each awarded to students of business and finance at the end of their sophomore year.

**Louisa Y. Robinson National Woman's Relief Society Scholarship.** A gift of \$5,000 from the General Board of the National Woman's Relief Society has established a perpetual fund, the annual earnings from which are available for Latter-day Saint women majoring in Social Work, or, as graduate students, majoring in Sociology with a special interest in the family or some field closely related to Social Work. The scholarship is in the amount of \$100 for undergraduate students and \$200 for graduate students. Undergraduate preference is given to Seniors, although Juniors are eligible, and are encouraged to apply. The scholarship is paid in full when the student completes her registration for the fall quarter. Application should include a transcript of credits, and two letters of recommendation, one of which must be from the Ward Relief Society President of the ward in which the student lives.

**Joseph A. Geddes Scholarship:** Limited to graduate students in sociology. The initial \$5,000 of this fund was contributed by students, friends and cooperatives. The Utah Cooperative Association in tribute to Dr. Geddes's services for cooperation contributes yearly the annual earnings from \$2,000. This scholarship provides an annual stipend of \$200. The award is made on a two-fold basis of high scholarship and character excellence. The Sociology staff is responsible for: (a) adding to the fund each year earnings in excess of the stipend, (b) aiding students to select projects useful to society, (c) supervising studies that emerge and their publication. Should the thesis or paper issuing require more than one year for completion the scholarship may be renewed for a second or a third year. Increments of the scholarship are payable in equal installments on November 1 and May 1 of each year.

**Alpha Zeta Award** is made annually by Alpha Zeta, fraternity honor society of agriculture and forestry students, to the sophomore in Agriculture or Forestry who made the highest scholastic record in his freshman year. The name of the winner is engraved upon a permanent trophy.

**The Phi Upsilon Omicron Scholarship** of \$25 is given annually by the Kappa Chapter of that organization to the Freshman girl in the College of Home and Family Living 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. The candidate must be a member of the Home Economics Club.

**Danforth Summer Fellowship.** Awarded to an outstanding Junior in Agriculture. This award covers the expenses of two weeks marketing study in St. Louis and vicinity and two weeks leadership training at the American Foundation Camp on Lake Michigan.

**Danforth Leadership Training Scholarship.** An award to an outstanding Freshman covering the expenses of two weeks summer leadership training at the American Youth Foundation Leadership Training Camp on Lake Michigan. Transportation is up to the individual.

**Rolla M. Rich Memorial Scholarship.** An award of \$50 to an outstanding student in agriculture in the upper division, who is active in the L.D.S. Church.

**Borden Agricultural Scholarship.** An award of \$300 to a Senior in agriculture who has completed two or more courses in dairy industry and has achieved the highest average grade among the students in agriculture in all college work preceding the Senior year.

**Burpee Award in Horticulture.** An annual award of \$100 to the student in Horticulture who rates highest in scholarship, practical experience and interest in flower, vegetable and seed growing.

**Ralston Purina Scholarship.** An award of \$500 given in recognition and assistance to an outstanding Junior in agriculture for use in his schooling the Senior year.

**Virginia Dare Award.** A cash award of \$25 to the outstanding Junior in Dairy Manufacturing.

**Swift and Company Award** to a student in agriculture who is winner of an essay contest on livestock marketing. This award provides an expense paid trip of about one week to Chicago in early spring to study marketing of livestock and livestock products.

**Sears-Roebuck Foundation Award for Sophomore.** An award of \$250 to the student in agriculture who, among the recipients of the Sears-Roebuck Award for Freshmen, had the highest grade point average the Freshman year. Available for school expenses for Sophomore year.

**Sears-Roebuck Foundation Award for Junior.** An award of recognition to the Sophomore who, among the recipients of the Sears-Roebuck Award for Freshmen, had the highest combined rating in scholarship, leadership and promise of achievement, evidenced by his university work during the Freshman and Sophomore years. The selection enters the student in a nationwide competition offering the following awards: One award of \$1,000, three awards of \$500 each, four awards of \$250 each.



**Farm Bureau Agricultural Leadership Award.** An award of \$200 to the Senior who has exhibited the greatest measure of growth and excellence in scholarship, constructive organization and leadership in the College of Agriculture throughout his university course. The winner's name will be engraved on the Caine Leadership Plaque.

**Utah Feed Manufacturing & Dealers' Association Scholarship.** An award of \$100 to an outstanding Senior with a major in some phase of animal industry, preferably one interested in animal nutrition.

**J. Fish Smith Scholarship.** An award of \$100 for the promotion of international relations, given to a foreign student in recognition of excellence in scholarship and contribution to international understanding and good will.

**The American Rambouillet Sheep Breeders' Association Challenge Cup.** To be presented each year to the student showing the greatest efficiency in fitting and showing Rambouillet sheep.

**The Ogden Union Stockyards Challenge Cup.** Awarded each year to the student who shows the most proficiency in judging beef cattle.

**The Hawaiian Steamship Company's Challenge Cup.** Awarded each year to the student who shows the most proficiency in judging wool.

**The Salt Lake Union Stockyards Company Challenge Cup.** Awarded each year to the student who shows the most proficiency in judging hogs.

**The John K. Madsen Challenge Cup.** Awarded each year to the student who shows the greatest proficiency in judging sheep.

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

**Home Economics Awards.** Certificates of merit are conferred annually upon senior women in Home Economics adjudged by faculty and seniors 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. Candidates shall have a grade point average of three or better.

**Chi Omega Fraternity Scholarship of \$25** is awarded annually to the girl majoring or

minoring in Social Sciences who gives evidence of superior scholarship and ability to make a contribution to organized group life. The Committee of Awards is appointed by Chi Omega Fraternity each year from the teaching staffs of the Sociology and Economics Departments.

**Associated General Contractors Scholarship Award.** A gift of the Intermountain Chapter, A. G. C., provides a scholarship grant of \$200 to a Junior Engineer student. The award is made on the basis of scholarship, promise as an engineer, and need. Selection is made by a committee representing the A. G. C. and the Civil Engineering Department. Applications for the succeeding year must be filed with the Dean on or before April 1.

**A. S. C. E. Membership Award.** Junior Membership in the American Society of Civil Engineers, is awarded by the Intermountain Section, A. S. C. E., to a graduating senior in Civil Engineering on basis of scholarship, activities, and personality. Selection is made by the Intermountain Section upon recommendation by the Engineering Faculty.

**Eric W. Ryberg Scholarship.** A grant of \$200 from the Utah Sand and Gravel Company is made to a student in Civil Engineering selected by a special committee. Application should be made to the Dean of the College of Engineering by December 1.

**The Eric W. Ryberg Memorial Scholarship in Commerce,** sponsored by Eric C. and Maridean M. Ryberg, is awarded annually to a Junior, Senior, or graduate student in College of Business and Social Science (preferably one majoring in Business Management). The award is made on the basis of scholarship, character, personal interest in and adaptability to the field of Business Administration, and need. This scholarship carries a stipend of \$200.

**Engineering Faculty Award.** Junior Membership in the A. S. C. E. or A. S. A. E. awarded by the Engineering Faculty to a graduating senior in Engineering on basis of scholarship, and promise of success in engineering. Selection is made by the Engineering Faculty.

**Sigma Tau Award.** To the outstanding Sophomore Engineering student for scholarship, sociability and practicability. Selection made by the Alpha Delta Chapter of Sigma Tau, an honorary engineering fraternity.

**A. S. C. E. Student Chapter Award.** Junior membership in A. S. C. E. to the senior doing most for the chapter. Selected by vote of members.

**The American Society of Tool Engineers Awards.** Two \$100 scholarships are awarded to engineering students who show interest, ability and scholarship in pursuing tool engineering curriculum. Donors are Eimco, and McGhee & Hogan Machine Works, Salt Lake City. Application should be made to the Salt

Lake City Chapter 85 or the Tool Engineering Department, USU, not later than February 10, each year.

**Deseret News and Salt Lake Telegram Professional Internship.** The News & Telegram offers the outstanding junior student in journalism a scholarship including one year's tuition at the University and employment with the News, either at Salt Lake City or at one of its bureaus, during the summer between the junior and senior years. The winner is selected by judges representing USU and the News.

**Herald Journal Scholarship in Journalism.** The Logan Herald Journal annually presents a \$50 scholarship at the beginning of the winter quarter to help some worthy journalism student continue at the university.

**Cache Valley Chapter of the Utah State History Society Award.** The Cache Valley Historical Society offers annually an award of \$25 to the U. S. U. student writing the best acceptable treatise on any phase or field of Cache Valley history. Papers must be submitted on or before the end of the spring quarter and become the property of the Cache Valley Historical Society.

**Colonel Joe E. Whitsides Award** is given to the outstanding student-athlete selected by the Athletic Council on the basis of (1) academic achievement, (2) athletic achievement, (3) army (R.O.T.C.) achievement, (4) adjustment to meet the daily demands in character, social and general culture.

**The American Legion Military Medal,** a gift of the Logan American Legion Post, is awarded each year to the athletic letterman who maintains the highest scholastic record during the year, and who exhibits the most wholesome attitude toward military training.

**Jean H. Alleman Memorial Scholarship.** A two hundred dollar cash award based on scholarship, enthusiasm, and prospects for success in the field of retailing.

**Phi Kappa Phi Scholarship Award.** A one hundred dollar cash award given to a Sophomore student of high scholarship and outstanding character.

**Greaves Memorial Scholarships.** Two seventy-five dollar cash awards in memory of Drs. Joseph E. and Ethelyn O. Greaves for students who have achieved in the fields of Science and Home Economics.

**Home and Family Living Scholarship Awards.** These are joint awards offered by the residence staff in the College of Home and Family Living and the extension staff members in Home Economics. Minimum awards of \$100 are given to a Junior and Senior student in Home and Family Living who plans to receive a degree from the College. The awards are based on scholarship, citizenship, need, and participation in activities centering around the University.

**Moen Memorial Scholarships.** Two cash awards of one hundred twenty five dollars each in memory of Johanna Moen given to worthy students in the College of Home and Family Living who show outstanding aptitude in the field.

**Sears Roebuck Foundation Award in Home Economics.** An award of \$200 given to a freshman student in the College of Home and Family Living who has a high scholastic standing, leadership ability, and promise of achievement.

**4-H Scholarship** offered by Alpha Gamma Rho. Believing thoroughly in the value of the 4-H Clubs in the building of future citizens and desiring to aid 4-H members in their effort to secure a better education, the National fraternity of Alpha Gamma Rho offers annually, a cash scholarship of \$200 to be applied toward a full term course at any suitable accredited college of agriculture. The National 4-H Awards Committee has sole responsibility for selection of the winner from among the candidates nominated by the State 4-H Club Leaders, such selection to be on the basis of scholarship, achievement and demonstrated need. Further information may be secured from Alpha Gamma Rho Fraternity, 706 West Michigan Avenue, Urbana, Illinois

**FFA Scholarship** offered by Alpha Gamma Rho. Believing thoroughly in the value of the FFA in building Future Farmers of America and designed especially to aid FFA members in their efforts to secure a better education, the National Agricultural fraternity of Alpha Gamma Rho offers annually, a cash scholarship, of \$200 to be applied toward a full term course at any suitable accredited college of agriculture. The American Vocational Association has sole responsibility for selection of the winner from among candidates nominated by the State Supervisors of Agricultural Education, such selection to be on the basis of scholarship, achievement and demonstrated need. Further information may be secured from Alpha Gamma Rho Fraternity, 706 West Michigan Avenue, Urbana, Illinois.

**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) University activity, 15 points; (d) Leadership, 20 points; (e) Aptitude for and interest in Military Science, 20 points; (f) Physique and bearing, 10 points.

**The Utah State University Science Medal,** a gift of the late Director Emeritus William Petersen, 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.

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Scholarship A's in the form of gold pins are given 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 Scholastic Award.

**Alpha Kappa Psi Scholarship Award.** Alpha Kappa Psi Fraternity, Alpha Theta Chapter of which is established at the Utah State University, awards annually the Alpha Kappa Psi Scholarship Medallion to the male senior in business with the highest scholastic average for four years of study in this College.

**Alpha Kappa Psi Scholarship Award.** Alpha Kappa Psi Fraternity, Alpha Theta Chapter of which is established at Utah State University, awards annually the Alpha Kappa Psi Medallion to the male senior student in business who possesses the highest scholastic average for three years of work taken in this University.

**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 Chemistry.

**William Alger Awards.** A gold key is awarded annually by Alpha Epsilon Delta, pre-medical society, to the outstanding Freshman pre-medical or pre-dental student. Scholarship, character and possibilities in medicine or dentistry represent the bases for the award.

**Blue Key Award.** Each year Blue Key Honorary Service Fraternity awards a "service plaque" to an outstanding freshman or sophomore male student. Candidates are judged on university activities, scholarship, service to the university, and moral character. Application forms can be obtained from the organization and must be filed with the Blue Key Awards Committee on or before April 15.

**John A. Widtsoe Memorial Scholarship.** One graduate scholarship of \$500 will be available to an outstanding senior to pursue graduate study; one scholarship of \$200 will be given to an outstanding junior; and one scholarship of \$200 will be presented to an outstanding freshman. All who receive scholarships must use the monies in university work the coming school year. Checks will be sent to them following registration in the fall term.

**Faculty Women's League Scholarship Award** is awarded to Senior women and is based on scholastic records for full undergraduate work. To be eligible for this award, candidates must have spent at least two years at this institution.

**Faculty Women's League Democracy Award** is awarded to Senior women. Candidates must have evidenced the best understanding of the democratic ideal in its application to university life, as exemplified by the following considera-

tions: (1) Awareness of issues vital to university life, (2) individual responsibility for their solution, and (3) accommodation of individual interests to what seems to be the common good.

A **University 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 following bases:

(a) The potential vocational or professional efficiency of the student as shown by his scholarly attainment, industry, natural ability and talent (50 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 **University Award** is also conferred annually upon the **woman 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).

### Scholarships and Grants-in-Aid

(Primarily for new students)

The University grants annually to students scholarships covering from one to three quarters' tuition each on the basis of outstanding academic ability or demonstrated ability in the areas of speech, drama, music, art, athletics, commercial training, and other academic subjects. Tournament and contest winners frequently receive these awards.

The University also awards grants-in-aid to help deserving students with good athletic ability who have economic need.

To be eligible for a grant-in-aid, an athlete must meet either of the following requirements:

(1) A freshman must have been academically rated as in the upper

two-thirds of his high school graduating class. For the first year such award shall be made on an annual basis.

(2) A student, other than a freshman, must be in good academic standing and not on probation. Such award shall be made on a quarterly basis.

All of the above awards are under the jurisdiction of a Scholarships, Awards and Honors Committee, which alone has the authority to promise or grant an award. All applications for grants-in-aid or scholarships should be made to the chairman of this committee.

All scholarships and grants-in-aid must be applied toward the payment of tuition or fees.

Any scholarship or grant-in-aid may be withdrawn at any time for academic or other good and sufficient reasons if, in the judgment of the Director of Student Services and Activities, the recipient has clearly demonstrated his failure to comply with both the spirit and the letter of the original terms of the scholarship or grant-in-aid.

**Tuition Scholarships.** The President of the University is authorized by Title 53, Chapter 34, Section 1-a, Utah Code Annotated, 1953, to waive registration and tuition fees in full or in part for a limited number of meritorious or impecunious students whose domicile is in the state of Utah.

**Logan Kiwanis Club.** Three \$100 scholarships awarded to outstanding students who are in need of financial assistance.

**Logan Lions Club.** Three \$100 scholarships awarded to outstanding students who are in need of financial assistance.

**Logan Rotary Club.** Three \$100 scholarships awarded to outstanding students who are in need of financial assistance.

**Palmer Scholarships.** Mr. and Mrs. Val. W. Palmer made a gift of \$10,000 as a scholarship fund. Ten scholarships of \$100 each are awarded each year to students of outstanding scholarship and leadership ability.

**Home Economics Scholarship.** The faculty of the College of Home and Family Living awards one \$100 scholarship to a high school graduate

who shows special interest and ability in the field of home economics.

**Faculty Women's League Annual Freshman Scholarship** provides tuition for one year for a freshman woman. Selection is based on need, scholarship, and leadership.

The following 4-H Club scholarships are available to Utah 4-H Club members. (Additional information may be obtained from county agents.)

**Carl Raymond Gray Scholarships.** The Union Pacific Railroad awards 16 scholarships annually to Juniors or Seniors in high school who are enrolled as 4-H Club members. These members' scholarships are \$100 each and are to be used at Utah State University or its branches. The scholarships are available in the following counties: Beaver, Box Elder, Cache, Davis, Iron, Juab, Kane, Millard, Morgan, Rich, Salt Lake, Summit, Tooele, Utah, Washington, Weber.

**Standard Oil Scholarships.** The Standard Oil Co. of California offers 5 scholarships to 4-H Club members in Utah as follows: \$350, 1st; \$300, 2nd; \$250, 3rd; \$250, 4th; and \$200, 5th.

**Utah Dairy Federation.** The Utah Dairy Federation gives an annual scholarship of \$100 each to a 4-H boy and a 4-H girl who will enroll in Dairy or Home Economics at U.S.U.

**National 4-H Club Contests.** National scholarships of \$300 each are available to 4-H Club members in at least 22 different projects or activities.

**Sears Roebuck and Company Scholarships.** For Freshmen in the College of Agriculture the company offers 13 scholarships of \$200 each, \$75 of which is paid at the beginning of the fall term, \$75 at the beginning of the winter term and \$50 at the beginning of the spring term. Winners are determined on the basis of scholarship, interest in agriculture, financial need, and leadership. The winner who has the best scholarship record at the end of his freshman year, receives an additional scholarship for use in his sophomore year. Application blanks and information may be obtained from the Dean's Office.

**Fine Arts Talent Awards.** The Intermountain Theatres and Utah State University Fine Arts Department sponsor a Fine Arts Film Festival. Twenty per cent of the proceeds are placed in a special talent award fund. Regular \$100 scholarships are available for talented students regardless of their native state. Students interested should make formal application to the Department of Fine Arts and make arrangements for musical or theatrical auditions or submit a portfolio of art work. Students receiving these awards agree to remain active in their creative art specialty while at Utah State University. They need not major in field of specialization for which the award is given, but this is strongly recommended.

## Loans

It is the earnest desire of the institution that no student be prevented from completing school because of some temporary financial limitation. As a phase of the program of financial aid to students, small loans are made available on a business-like basis. Personal qualifications and need for financial assistance are the principal criteria.

Except in cases of extreme emergency no loans will be made during the last two weeks of any quarter.

Individual financial problems may be discussed with the Chairman of Student Loans, Main Building, Room 372.

The total Student Loan Fund is composed of the following individual loan funds generously contributed by friends of U. S. U.:

**U. S. U. Faculty Women's League.** A loan fund for women students. Loans may range from \$50 to \$150. Preference is given Seniors.

**U.S.U. Faculty Women's League Revolving Loan Fund** provides for short time loans, not to exceed \$20, to women students for emergency purposes.

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

**Rotary Club Senior Loan Fund.** The Logan Rotary Club has provided a special loan fund to assist students in meeting expenses during their Senior year.

**Robert L. Judd Loan Fund** was given by Mrs. Judd in honor of her late husband. Loans are available to undergraduate men who have ability and need financial assistance.

**W. B. Rice Memorial Loan Fund** provides loans up to \$200, usually for one year, to deserving students in the School of Forest, Range and Wildlife Management. Application is made to the Dean's office.

**Bureau of Land Management Loan Fund** provides loans up to \$100 to deserving students in the College of Forest, Range, and Wildlife Management. Application should be made to the Dean's office.

**Marjorie Poulson Loan Fund.** A fund provided by the father of a former Aggie student active in student body affairs.

**Ichel Waters Loan Fund.** An individual gift to assist students in need.

**J. Reuben Clark Small Loan Fund.** A reserve specifically provided for assistance to students in meeting school obligations.

**O. W. Israelsen Loan Fund** available to senior engineering students only. Application is made in the College of Engineering. College of Forestry has a small loan fund for students enrolled in that college.

## Employment

The Office of Student Employment Placement assists students who are capable of carrying an academic load and need to supplement regular income through part-time employment. Students' wives are also assisted in obtaining positions.

All students and students' wives desiring campus employment must register with this office and be appropriately cleared before being hired.

To extend off-campus services, the University has established a cooperative arrangement with the Logan Branch of the Utah State Employment Service. Requests for information on employment should be addressed to Chairman, Student Employment Placement.

Students from foreign countries must obtain a work permit before they can receive employment. Such permits may be acquired from the Foreign Student Advisor or the Immigration and Naturalization office in Salt Lake City, Utah.

Students under eighteen who find employment must obtain a work permit. These are controlled by the Logan City Board of Education. Further information is available in the Office of Student Employment Placement, Main 133.

## Counseling

In recognition of the fact that you and other students are faced



with many problems throughout your University career, a broad program of counseling services has been established to meet your individual needs in making and maintaining satisfactory adjustments to the University and life.

Under the supervision of the Coordinator of Counseling Services, the counseling program provides for all students the following services: (1) counseling with educational, vocational, personal, and marital problems; (2) individual and group testing; (3) occupational and educational information; (4) assistance with study skills; and (5) faculty advisement in each of the departments and colleges of the University. In addition, this program provides training opportunities in counseling and testing for graduate students in Education, Psychology, and related fields.

The University strives to give you the assistance you need and desires to help you make wise decisions regarding your educational, vocational, and personal problems. Accordingly, at the time of admission to the University, you are assigned a faculty adviser with whom you will meet and have opportunity to discuss your academic program. If you live in a residence hall you are also invited to seek your residence counselor, who is in a position to assist you with many types of problems or to refer you to the person who can be of most help.

When you have problems requiring the help of specialized counselors, you are referred by faculty advisers and residence counselors to the Office of the Coordinator of Counseling Services. You are also encouraged to request such services through the Counseling office directly.

*Guidance tests* related to your achievements, abilities, interests and adjustment are also available upon request. Although certain basic tests are given to all new lower division students not having taken them while in high school, upper division students as well may avail themselves of this information. The data from these tests are used as a basis for counseling. If you have not decided upon a course of study you are especially encouraged to seek such information and assistance. If you wish to change from one college of the University to another you must clear with the Counseling Service before such a change may be made.

A file of current occupational literature dealing with job facts and labor market trends in most occupational fields is maintained in the Office of Student Services, and is available to you. Counselors help students use this information to investigate and appraise occupations in which they might have an interest. Current catalogs of major universities and technical schools are also available.

A close relationship with community and state agencies is maintained so that when you need services not provided by the University you can be helped in obtaining such services by referral to these other agencies.

## Health

### *Regulations and requirements:*

(1) A health exam is required of all new students and of all who participate in athletic and physical education activities.

(2) You are encouraged to have your family doctor give the exam and report on a form provided by the Health Center.

(3) It is highly recommended that students purchase the Voluntary Student Accident and Sickness Insurance available to them.

(4) Office Hours: 8 a.m. to 5 p.m. daily; 10 a.m. to 12 noon Saturday.

The following medical service is available to all registered students without extra cost:

(A) Regular dispensary care: (1) Consultation on health matters. (2) Medical exam. (3) Care for emergencies such as: fractures, sprains, bruises, dislocations, cuts, sutures, and all ordinary health matters requiring medical and minor surgical attention. (4) X-rays for injuries—fractures, etc. (5) Consultation for all different cases when needed. (6) Inoculations and immunizations.

Note: This includes all the care regularly given in any doctor's office or clinic.

(B) These services are intended to cover the resident student while on the campus between the hours of 8 a.m. and 5 p.m., and students off the campus in a school supervised activity.

(C) Does not include: (1) Emergencies occurring off the campus. (2) Emergencies occurring out of town. (3) Chronic illness originating before entrance to school. (4) Hospital care for any condition. (5) Major surgery. (6) Service to wives or children of students.

(D) *House calls* will be made during Doctor's office hours if reported to the Health Center. House calls or emergencies called in after Doctor's office hours will be charged at the rate of \$2 per call.

(E) No medical bills or charges will be paid by the Health Service unless the service has been approved by the USU Health Center.

(F) In case of illness or emergency, call: USU Student Health Center, Telephone 100, Ext. 435.

## Orientation

A program of activities has been designed to acquaint you with the life and environment of the University community. Participation in these orientation activities is required of all new students at the beginning of each quarter. In addition to group meetings for instruction in traditions, policies and procedures, there are opportunities for pre-registration interviews with faculty and administrative personnel. Entertainment through movies, dances, mixers and game rooms of the Student Union all reflect the many purposes for which this program is established.

At the beginning of each academic quarter each new student in the University who has less than 96 quarter credit hours, is required to take certain standardized tests, unless such tests have been taken at the school last attended. The results are used by faculty and counselors to assist in placement and as guidance aids. For example, credit for Basic Communications is dependent upon information concerning such test scores as a part of the student's record.

## Foreign Student Advisement

Students from outside the United States are provided a friendly and sympathetic counselor in the person of Dr. George A. Meyer, Foreign Student Adviser, Room 124, Main Building. He advises with all students from abroad concerning problems of adjustment to University

life and refers them to the appropriate agencies and individuals on campus and elsewhere for further assistance.

Foreign students will obtain additional help from the Registrar's Office in matters of acceptance and admissions, registration, withdrawals, reports to the Immigration Service and "extensions of stay" in the United States.

All students from abroad are invited to participate in activities sponsored by the Cosmopolitan Club. This organization has a membership of students and townspeople from America and foreign land and promotes numerous activities fostering international friendships.

## Speech Clinic

The Speech Clinic provides individual help and special classes for persons having speech handicaps. The services of the speech clinic are available to anyone. The types of problems handled include stuttering, delayed speech development, lisping and other articulation disorders, cleft palate speech, paralytic speech, "nervous" speech conditions, nasal speech, voice quality deviations, etc. All University students who have defective speech should register for Speech 75, Remedial Speech. Time and credit are arranged. The instructor is available for individual consultation, Room M 79.

## Student Activities

All students are encouraged to participate in one or more of the following activities, dependent upon available time and academic load:

### (1) *Intercollegiate athletics.*

Utah State University's Intercollegiate Athletics program compares favorably with the programs of leading institutions throughout the nation. As a member of the National Collegiate Athletic Association, and the Mountain States Athletic Conference, Utah State University guides its intercollegiate program by the policies and regulations of those organizations.

The University became a member of the Mountain States Athletic Conference—otherwise known as the Skyline Conference—February 28, 1914. Other institutions in the Conference are the Brigham Young University, Colorado State University, Denver University, University of Montana, University

of New Mexico, University of Utah and University of Wyoming.

USU's physical facilities for intercollegiate athletics include Romney Stadium, with a 9,000-spectator capacity; George Nelson Fieldhouse, with a 6,000-capacity basketball arena; a new baseball diamond, tennis courts, swimming pool, and running track. Major sports are football, basketball, baseball, and track. Minor sports are wrestling, swimming, skiing, tennis, and golf.

To be eligible for participation in varsity intercollegiate competition, students must maintain at least a "C" average in a minimum of thirty-six quarter credits in the three quarters immediately preceding the quarter of proposed participation. Generally, the same rule applies to participation in freshman sports.

General supervision and direc-

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tion of athletics for men is vested in the Director of Athletics. An Athletic Council consisting of the President of the University, the Athletic Director, five members

from the University faculty, an Alumni representative, an A-Men representative, and three student-body officers, exercise faculty control of athletics.

### USU 1958 Football Games

Date	Opponent and Place	Time
September 20	Arizona at Tucson	8 p.m.
September 26	Denver at Logan	8 p.m.
October 4	Kansas State at Manhattan	1:30 p.m.
October 11	New Mexico at Albuquerque	8 p.m.
October 18	Montana at Missoula	1:30 p.m.
October 25*	Colorado State University at Logan	1:30 p.m.
November 1	Brigham Young University at Logan	1:30 p.m.
November 8	Wyoming at Logan	1:30 p.m.
November 15	Idaho at Moscow	1:30 p.m.
November 25	Utah at Salt Lake City	1:00 p.m.

\*Homecoming

### USU 1959 Conference Basketball Games

Date	Opponent and Place	Day of Week
January 10	Utah at Logan	Saturday
January 16	Wyoming at Laramie	Friday
January 17	Colorado State University at Ft. Collins	Saturday
January 24	Montana at Logan	Saturday
January 30	Brigham Young University at Provo	Friday
February 5	Denver at Denver	Thursday
February 7	New Mexico at Albuquerque	Saturday
February 14	Brigham Young University at Logan	Saturday
February 20	Colorado State University at Logan	Friday
February 21	Wyoming at Logan	Saturday
February 26	Montana at Missoula	Thursday
February 28	Utah at Salt Lake City	Saturday
March 6	New Mexico at Logan	Friday
March 7	Denver at Logan	Saturday

(2) *Intramurals*. This program includes all seasonal sports for which awards are given.

(3) *Musicals*. Performances are given by band, orchestra, choral groups, and music clubs. These organizations present several concerts and recitals during the year, and participate in tours to parts of the surrounding area.

(4) *Theatricals*. Numerous productions are staged each year by student groups. Students participate in the lighting, staging, directing, and managing, as well as the acting.

(5) *Opera*. Each year the University produces an opera. Such operas as "Rigoletto," "Romeo and Juliet," "Carmen," and "Il Trovatore" have been presented.

(6) *Debating and Public Speaking*. The University is a member of the Rocky Mountain Forensic League, and each year meets schools of this group in discussion. Participation in debate tournaments in the Intermountain and Pacific Coast Region provides opportunity for experience in tournament debating. Utah State is noted for its Mid-Winter Speech Meet.

(7) *Student Publications*. Students publish a semi-weekly paper, *Student Life*, a yearbook, *The Buzzer*, and a literary magazine, *Scribble*; *Blue Book*, the official student handbook; and *Student Directory*, available to all regularly registered students. Some campus organizations sponsor publications of their own such as the Forestry Club's *Juniper*, and *Vapor Trails*, a monthly Air Force ROTC newspaper published by Arnold Air Society.

(8) *Radio Station KVSC*. The University operates an FM radio station which provides four hours of radio programs daily, prepared

and broadcast by students. KVSC is a member of the National Association of Educational Broadcasters.

(9) *Utah State University Lyceum and Cache Valley Civic Music*. The Lyceum-Civic Music series presents numerous national and international artists.

(10) *Dances and Entertainments*. In addition to the above, the Student Body Organizations furnish extensive entertainment in the form of dancing, parties, and athletic events.

(11) *Assemblies*. These are planned and produced by students to provide entertaining, spiritual and cultural programs.

(12) *Committees*. Students are members of virtually every university committee. This includes not only Student Body committees, but also committees set up by the administration.

## Student Government

*Associated Students*. All students of Utah State University upon payment of student activity fees, become members and are therefore entitled to participate in and attend all activities sponsored by the association. Athletic events, musicals, dramas, dances, Lyceums, etc., are events to which members of ASUSU are admitted by activity card.

*The Executive Council* consists of the five elected major officers of Associated Students; viz., presidents, secretary and business manager. The Council plays a major role in directing all student-conducted activities on campus.

*The Student Senate* is the legislative branch of student government and initiates policies for the



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welfare of the entire student body. Membership in the Student Senate includes: the Executive Council, the president of each of the four classes, a representative of each of the seven colleges, A. W. S. president, two representatives of independent students, and an international representative chosen by the foreign students on campus. There are three ex-officio members: president of Panhellenic, president of Inter-fraternity Council, and editor of Student Life.

### *Associated Women Students.*

Every woman student properly registered and enrolled in the University is a member of A. W. S. This organization fosters interest and participation in campus activities. It is governed by its own elected officers and board.

### *Governing Boards and Councils.*

Boards and councils composed of students and faculty supervise various activities: Women's Intramural Association, Men's Intramural, Civic Music, Athletic Council, Publications Council, Student Union Board, Student Activity Board, Inter-fraternity Council and Panhellenic Council.

## Student Organizations

(Departmental and Professional)

**Agriculture.** Ag Club, Ag Economics Club, Agronomy Club, Alpha Tau Alpha, Alpha Zeta, Bacteriology Club, Block and Bridle Club, Botany Club, Dairy Club, Horticulture Club, Poultry Club, 4-H Club, Vet Science Club.

**Business.** Alpha Kappa Psi, STAT Club (Secretaries Today and Tomorrow).

**Chemistry.** American Chemical Society.

**Education.** Phi Delta Kappa, Utah State Education Association.

**Engineering.** Engineering Council, American Society of Civil Engineers, American Welding Society, Industrial Education Club, Institute of Radio Engineers, Sigma Tau, Society of Automotive Engineers, Society of American Military Engineers, Tool Engineers Club.

**English.** English Club.

**Forestry.** Forester's Club, Forestry Wives, Xi Sigma Pi.

**Geology.** Geology Club.

**History.** Phi Alpha Theta.

**Home Economics.** Home Economics Club, Phi Upsilon Omicron.

**Landscape Architecture.** Landscape Architecture Club.

**Military.** Arnold Air Society, Pershing Rifles, Scabbard and Blade, Sponsors, Society of American Military Engineers.

**Music.** Alpha Eta Mu, Band, Chansonettes, Meistersingers, Orchestra, ROTC Band.

**Physical Education.** Badminton Club, Dance Club, PEMM (P. E. majors and minors), Ski Club, Square Dance Club, Swimming Club, Women's Intramural Association, Men's Intramural Association.

**Political Science.** International Relations Club, Pi Sigma Alpha.

**Pre-Med.** Alpha Epsilon Delta.

**Psychology.** Psychology Club.

**Sociology.** Sociology Club.

**Speech.** Tau Kappa Alpha, Theta Alpha Phi, Utah State University Speech Correction Association.

**Zoology.** Utazoa Club.

### Social and Special Interest

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

**Sororities, Social.** Alpha Chi Omega, Chi Omega, Kappa Delta, Sigma Kappa.

**Recognition and Honorary.** Alpha Sigma Nu, Sigma Xi.

**Regional.** Bear Lake Club, Canadian Club, Sudags, Weber, Arab Student Organization.

**Religious.** Baptist Student Union, Delta Phi, Lambda Delta Sigma, Newman Club, Westminster Fellowship, Interreligious Council.

**Scholarship.** Phi Kappa Phi, Alpha Lambda Delta.

**Service.** Blue Key, Intercollegiate Knights, Spurs, Sponsors.

**Miscellaneous.** Cosmopolitan Club, Dames Club, Human Relations Club, Independent Students Association.



## *Research Programs*



D. Wynne Thorne

## Research Programs

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# Research Programs

DIRECTOR, DIVISION OF UNIVERSITY RESEARCH AND OF AGRICULTURAL EXPERIMENT STATION, *D. W. Thorne*; DIRECTOR, ENGINEERING EXPERIMENT STATION, *V. E. Hansen*; DEAN, SCHOOL OF GRADUATE STUDIES, *J. S. Williams*; ASSISTANT TO THE DIRECTOR OF AGRICULTURAL EXPERIMENT STATION, *D. A. Burgoyne*; DIRECTOR, BUREAU OF EDUCATIONAL RESEARCH, *W. A. Borg*; CHAIRMAN OF THE BOARD, UTAH SCIENTIFIC RESEARCH FOUNDATION, *E. G. Peterson*; LEADER, UTAH COOPERATIVE WILDLIFE RESEARCH UNIT, *J. B. Low*; CHIEF, ROCKY MOUNTAIN FISHERIES INVESTIGATIONS, *O. B. Cope*; CHIEF, LOGAN FIELD STATION, U. S. PUBLIC HEALTH SERVICE, *A. D. Hess*.

Utah State University was among the first of the colleges and universities in the Intermountain area to have a research program. Originally the research was principally in agriculture. Now research projects are in every college and almost every department of the University.

*Research is closely associated with teaching and student activities.* Most of it is conducted by staff members who are also employed to teach part of their time.

Many students, both graduate and undergraduate, are employed to assist in research. The experience thus gained by students is an important part of their education.

Research affiliated with the University is under the general administration of the Director of University Research and of the Agricultural Experiment Station. Actual research operations are in several organizations. The principal organizations and areas of research are as follows:

## Division of University Research

It is the policy of the University to encourage and support research and all forms of creative, scholarly activities by staff members. Much of the research not associated with the Agricultural Experiment Station is administered under the Division of University Research. This research is supported by institutional funds and by grants from various private and public agencies.

*Policies on research and requests for support* are reviewed by the University Research Council. Present members of the Council and the area each represents are: T. Y. Booth, Literature and Arts; Judd M. Harmon, Business and Social Sciences; Eldon J. Gardner, Bio-

logical Sciences; Norman Bauer, Physical Sciences; Walter R. Borg, Education; Allen W. Stokes, Forest, Range and Wildlife Management; Florence Gilmore, Home and Family Living; Clayton Clark, Engineering and Technology; J. Stewart Williams, School of Graduate Studies, and Wynne Thorne, Research Division.

University research is especially devoted to developing the natural resources and the well being of people of the Intermountain area. Research is closely associated with teaching in that individual projects are conducted by members of the teaching staff with the aid of students. Some important areas of

research and types of investigations under way include:

*Art:* Two studies on the use of new materials for outdoor murals.

*Botany:* A cytological study of X-irradiated barley, which should give useful information on the use of atomic radiation to improve crop plants. The operation of the Intermountain Herbarium involves collecting, identifying and preserving plant species of the Intermountain area.

*Chemistry:* Fundamental studies are being made on the structure and stability of complex proteins and on the vapor pressure and lattice constants of certain compounds. These studies are directed toward improving the understanding and control of physical materials.

*Economics:* Continuing studies are devoted toward analyzing and describing the economic development of Utah.

*Education:* Such problems as methods of educating retarded children, improving reading skills, the influence of subconscious suggestions on learning, and improving bodily motor skills.

*Engineering:* The use of naturally occurring Utah materials for concrete, improving metal-soil contacts to reduce electrical resistance, and studies of ionization patches in the upper atmosphere are examples

of the extensive research in this college's Engineering Experiment Station.

*Geology:* The mineral deposits of northern Utah are being surveyed and the University Seismograph Station is being operated to expand our knowledge of earthquakes in western United States.

*History:* A history of Utah is being prepared for secondary schools.

*Physics:* Intensive studies are in progress to determine the way in which atomic radiations injure biological materials. Investigations on the flow of liquids and gases through tubes and orifices should aid in industrial pumping projects as well as in the flow of blood in veins.

*Physiology:* Studies involve the use of the kangaroo rat as a basis for a new pregnancy test for humans. Investigations on the inheritance of tumorous head in fruit flies offers a clue to cancer susceptibility in humans.

*Wildlife:* The limnology of Logan River and Bear Lake is being studied as a basis for planning improved fish production. The habits of the chukar partridge are being studied as a basis for increasing the population of this game bird in Utah.

## Agricultural Experiment Station

The Agricultural Experiment Station is a major division of the University. It was established in 1888 when the territorial legislature passed a bill creating Utah Agricultural College and Utah Agricultural Experiment Station. It is commissioned by state and federal legislative acts to conduct

the research needed to produce and prepare food and fiber and to develop and improve rural homes and rural living.

The investigations needed to fulfill Experiment Station responsibilities involve the full or part time services of about 125 professional staff members associated with 18



different departments of the University: Agricultural Economics, Agricultural Engineering, Agronomy, Animal Husbandry, Bacteriology, and Public Health, Botany and Plant Pathology, Chemistry, Civil and Irrigation Engineering, Dairy Industry, Foods and Nutrition, Forestry, Horticulture, Poultry Husbandry, Range Management, Sociology, Veterinary Science, Wildlife Management, and Zoology, Entomology and Physiology. The staff includes about 25 employees of the U. S. Department of Agriculture who are assigned to collaborate in agricultural research activities. A large number of undergraduate and graduate students are employed on a part time basis to assist with the studies.

*The Experiment Station investigations are now organized into about 170 research projects.* Some of the principal areas of research include: breeding and testing of new and improved crop varieties; the diagnosis and control of plant diseases; the control of insects; diagnosis and control of diseases and parasites of animals; the breeding and nutrition of dairy and beef cattle, sheep and swine; breeding and testing improved lines of laying hens and turkeys; the feeding and nutrition of poultry; production of vegetable and fruit crops; weed control; mapping and classification of soils; fertilizing and managing soils; irrigation and drainage; managing watersheds and rangelands; conservation of water and soils; gathering snow survey data and predicting stream flows; research on processing and marketing of farm products; finding new or improved uses of farm products; the economics of agricultural production; human nutrition; social relations of rural peo-

ple. The investigations range from applied field tests to fundamental research under controlled laboratory conditions.

Station research is periodically reviewed by advisory committees representing every segment of the agricultural industry. These committees evaluate the progress of research efforts and recommend problems in need of further study.

*Main offices of the Agricultural Experiment Station* are on the University campus in the agricultural science building. Most of the research laboratories used by the Experiment Station are also on the campus, distributed among the various University buildings.

Greenhouses are maintained for investigations in horticulture, agronomy, botany, plant pathology, entomology, bacteriology and range management.

Livestock husbandry investigations are conducted at the barns on the University campus, and at the two branch campuses: the College of Southern Utah, at Cedar City, and Snow College at Ephraim; at the U. S. Forest Service Desert Range Station, at the Benmore Experimental Range in Tooele County, and on the ranges in different parts of the state.

The Station maintains the following field stations staffed with one or more technically trained men:

*Howell Field Station for Horticultural Research*, located in Weber County, north of Ogden. This is a 71-acre tract of land plus laboratory and storage buildings used for investigations in the production, harvesting, storage and marketing of fruit.

*Farmington Field Station* at North Farmington. This consists of 96 acres of land and a fruit and

vegetable processing laboratory and is used for experimental work in horticulture, floriculture and vegetable crops.

*Sanpete Field Station* located north of Ephraim and operated cooperatively with Snow College. This is a 94-acre tract used for research and demonstrations on crop production and dairying.

*Range Livestock Field Station* is located in the vicinity of Cedar City and is operated cooperatively with the College of Southern Utah. It consists of 1200 acres on the Valley Farm west of Cedar City, 2820 acres of summer range land east of Cedar City and 7800 acres of leased winter range land near Modena. Breeding and management of range sheep and beef cattle are studied.

The Station also maintains the following experimental farms:

*Animal Husbandry Farm*, north of the campus, contains 362 acres of land used for pastures and feed production. Investigations include the breeding, nutrition and management of sheep, swine and beef animals.

*Cache Valley Reclamation Farm*, located northwest of Logan in the center of poorly drained pasture lands, consists of 115 acres. This is used for research on drainage and improvement of fine textured, water-logged lands.

*Dairy Farm*, at North Logan, includes 183 acres of land, barns, milking parlor and a house. The Station maintains an experimental Holstein-Friesian and Jersey dairy herd of about 100 pure-bred animals. Pasture investigations are also conducted.

*Evans Farm*, a 42-acre tract located south of Logan, is used in cooperation with the U.S. Depart-

ment of Agriculture for a study of improvement of forage plants. Special attention is given development of improved plants for irrigated pastures and for range lands.

*Greenville Farm*, a 46-acre tract, is used for experimental work in plant breeding and other phases of crop production.

*Nephi Farm* is used for experimental work in dry farming and range seeding. This farm has 103 acres.

*Panguitch Farm*, north of Panguitch, consists of 150 acres of irrigated land with accompanying buildings. Crop production in high altitude areas and breeding of beef cattle are the principal investigations conducted.

*Poultry Farm*, in North Logan, is used for research on the breeding, feeding, and control of disease in chickens.

*Turkey Farm*, a 33-acre farm east of the campus, is used for studies in turkey breeding, nutrition, and disease control.

*Benmore area* of 3,500 acres of reseeded range pasture is used in cooperation with the U. S. Department of Agriculture for studies in management of range cattle and for research in range management.

The Station also conducts experiments on a cooperative basis with farmers and ranchers on more than 150 privately owned farms located in all parts of the state.

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. About 200 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.

## Engineering Experiment Station

The Engineering Experiment Station of Utah State University was established December 2, 1918 by act of the Board of Trustees. The director has supervisory responsibility to the Dean of Engineering for all research conducted by the various departments and staff members of the College of Engineering except that which they do for the Agricultural Experiment Station.

The Engineering Experiment Station is a major part of the College of Engineering. It has the broad purpose of furthering engineering sciences, engineering arts, and engineering education, especially as these relate to improving the welfare of Utahns, through development of agriculture, industry, natural resources, and in development of methods of more effective engineering teaching.

*Important public service projects* being pursued by the Station include developments in control systems, machinery, fuel and power, computation methods, electrical power applications, electronic designs, and water supply, control and conveyance.

The Station conducts basic and applied research in civil, electrical, mechanical, tool and agricultural engineering. Emphasis is placed upon development of water resources and methods of water control and utilization. Typical subjects currently under study include highways, materials, hydraulics, servo-mechanisms, and radio propagation.

Staff members of the Civil, Electrical, Mechanical, Tool Engineering departments and the Industrial and technical Education department, constitute the staff of the Engineering Experiment Station. The Station cooperates closely with the Utah Scientific Research Foundation. All laboratories of the College of Engineering and Technology as well as the facilities of the Utah Scientific Research Foundation are available to assist in the execution of the projects of the Station.

Results of these studies are published in research bulletins, engineering reports and papers, or are otherwise made available to those interested.

*"The seeker after truth," said Gandhi, "should be humbler than the dust."*

## School of Graduate Studies

Each year at Utah State University more than a hundred students complete their work for an advanced degree. These degrees include the Master of Science, Master of Education, Master of Forestry, Civil Engineer, Irrigation Engineer, Doctor of Education, and Doctor of Philosophy.

In most cases, to qualify for one of these degrees the student must complete an intensive, carefully supervised research project and thesis in the area of his major interest. The data obtained in these research projects not only help qualify the student vocationally, but also make a real contribution of knowledge and understanding in the area studied.

The thesis prepared from the research project is bound and micro-

filmed and is permanently available in the University Library. Abstracts of all theses completed during the past year are published, in one volume, at commencement time. Ofttimes, scholarly or popular articles, based upon the theses, are submitted to and published in various magazines and journals. Newspaper, radio, television, classroom, and other uses are also made of these research findings.

Such projects in graduate studies have been conducted in, and made contributions to, a great variety of specific areas in agriculture, home and family living, engineering, forestry, range and wildlife, business, social sciences, exact sciences, the arts and humanities, education—in fact, in nearly every subject taught at the University.

## Bureau of Educational Research

The College of Education maintains a Bureau of Educational Research which serves the following functions:

(1) Coordinates research activities in the College of Education. The bureau cooperates closely with the Division of University Research and the School of Graduate Studies.

(2) Plans and conducts educational research in problem areas of interest to Utah educators.

(3) Provides information and research services to Utah educational administrators.

(4) Represents the University in state-wide and nation-wide cooperative educational research projects.

(5) Provides guidance and research source materials to graduate students in the College of Education.

*With all Thy getting, get Understanding.*

# Utah Scientific Research Foundation

This is a non-profit corporation organized in 1944 as an affiliate of the Utah State University with the primary objective of encouraging scientific investigation. The Foundation conducts independent investigations and serves in the interest of the University in obtaining and developing patents, profits from which are dedicated to the support of further research at the University in the public interest.

Among the accomplishments of the Foundation are the development of a farm mower which eliminates the traditional Pittman rod; the design and production of a soil core sampling machine which has proved useful in soil and drainage investigations, and the development of the Trackmaster snowmobile, which is in use by various public and private agencies in the United States and Canada, and a number of units

of which are used for transportation on the DEW (Distant Early Warning) Line in the Arctic.

The Foundation also serves departments of the University in the design and production of special precision apparatus, not available on the market, for use in research and teaching. In addition to the staff of the Foundation, technical assistance is given by faculty members from various departments.

The Board of Directors and officers of the Foundation are: Elmer G. Peterson, Chairman; Wilford W. Lundberg, President; Daryl Chase, President of the University; Dee F. Wangsgaard, Hubert C. Ward and Ernest G. Earl, Directors; James A. Hardman, Project Director; Blaine B. Rich, Business Manager; and J. LeMar Larsen, Secretary-Treasurer.

## Utah Cooperative Wildlife Research Unit

The Utah Cooperative Wildlife Research Unit was initiated in 1935 through a Memorandum of Understanding between the Utah State University, U. S. Fish and Game Commission, Wildlife Management Institute and the U. S. Sport Fisheries and Wildlife Service. The Unit's objectives are to:

(1) Train students in wildlife management, research demonstration and administration.

(2) Conduct research basic to proper utilization of wildlife and fisheries resources.

(3) Promote wildlife education

through demonstration, lecture and publication.

(4) Make results of investigations available to cooperators and the public.

Through the Research Unit's program, students are trained for state, regional, and national positions in wildlife management, research and other phases of natural resource conservation. Students whose studies are financed through the Unit program are selected from high ranking candidates of institutions in wildlife management, zoology, botany and related fields.



## Rocky Mountain Fisheries Investigations

The Bureau of Sport Fisheries and Wildlife has maintained a station at Utah State University known as the Rocky Mountain Fisheries Investigations. This group of four fisheries biologists came to the campus in 1953. Purpose of this research group is to study the factors affecting the fisheries of waters on public lands.

At present the investigations are concerned with the waters of Yellowstone Park. Professional biologists study mortality, creel harvest, growth rate and other phases of the fishery of Yellowstone Park. During the summer, wildlife management students assist in this research program.

## Logan Field Station, U. S. Public Health Service

U. S. Public Health Service's Communicable Disease Center has maintained a field research station at Logan, Utah, for several years, as a cooperative activity with Utah State University. Working relationships with the University are set forth through a cooperative agreement with the Department of Health, Education and Welfare.

This station is responsible for conducting research on the natural history and control of encephalitis and on other insect vector problems related to the development and utilization of water resources.

Information from these studies, together with existing knowledge of control technology, is utilized by the Public Health Service in planning and integrating vector control

into inter-agency river basin developments and individual water resource projects sponsored by various federal agencies.

The Professional staff of the Logan Field Station includes biologists, public health engineers, and medical entomologists. Students are employed as research assistants, and graduate students frequently develop theses under direction of the Field Station staff. The Field Station headquarters are at 290 West Center, Logan.

The research activities of the Logan Field Station are of interest to the Utah State University, and several studies are being conducted in close cooperation with the Agricultural Experiment Station and other divisions of the University.

*The partner of power is responsibility.*



*Utah State University*  
*Cooperative Extension Service*



Carl Frischknecht, Director

# Utah State University Cooperative Extension Service

## Administrators and Supervisors

DIRECTOR *C. Frischknecht*; ASSISTANT DIRECTOR *W. H. Bennett*; DISTRICT SUPERVISORS *L. R. Hunsaker, R. R. Keetch*; SUPERVISOR OF HOME ECONOMICS PROGRAM *T. Huber*; STATE 4-H CLUB LEADER *G. T. Baird*; ASSOCIATE STATE 4-H CLUB LEADER *A. R. Kearsley*; ASSISTANT STATE 4-H CLUB LEADER *G. L. Beckstrand*.

## State Subject-Matter Specialists

AGRICULTURAL ENGINEER *J. D. Wadsworth*; AGRONOMIST *L. A. Jensen*; ANIMAL HUSBANDMAN *G. R. Henderson*; CLOTHING SPECIALIST *T. Johnson*; DAIRY MANUFACTURING SPECIALIST *A. J. Morris*; DAIRYMAN *L. H. Rich*; ENTOMOLOGIST *G. F. Knowlton*; FARM MANAGEMENT SPECIALIST *J. Valentine*; HOME MANAGEMENT AND FURNISHINGS SPECIALIST *R. H. Gardner*; HORTICULTURALIST *A. B. Call*; INFORMATION SPECIALIST *E. O. Haroldsen*; LIVESTOCK MARKETING SPECIALISTS *H. H. Smith, \*M. H. Taylor*; NUTRITIONIST *E. Miller*; POULTRY SPECIALISTS *E. Clark and L. Darrington*; PUBLICATIONS EDITOR *G. L. Harrison*; ASSISTANT PUBLICATIONS EDITOR *N. Collett*; RADIO AND TV SPECIALIST *S. L. Brower*; RECREATION SPECIALIST *C. R. Jensen*; SOCIOLOGIST *W. A. DeHart*; SOIL CONSERVATIONIST *P. D. Christensen*; VETERINARIAN *D. W. Thomas*.

## County Agricultural Agents

BEAVER, *G. M. Esplin*; BOX ELDER, *A. F. Allred, R. H. Finch*; CACHE, *L. E. Tueller, R. Burtenshaw*; CARBON, *R. L. Hassell*; DAVIS, *L. D. Stokes, L. S. Rogers*; DUCHESNE, *W. L. Smith*; EMERY, *G. Olson*; GARFIELD, *H. G. Lindsay*; IRON, *W. D. Sjoblom*; JUAB, *D. Bendixsen*; KANE, *D. W. Rose*; MILLARD, *R. G. Rickenbach, J. Ogden*; MORGAN, *R. F. Argyle*; PIUTE, *R. W. Buck*; RICH, *W. T. Maughan*; ROOSEVELT, *R. S. Murdock*; SALT LAKE, *J. F. Parrish, L. Esplin*; SANPETE, *C. D. Funk, P. R. Grimshaw*; SEVIER, *E. L. Guymon*; SUMMIT, *J. R. Moore*; TOOELE, *E. O. Biggs*; UTAH, *W. F. Farnsworth, L. A. Clement*; UTAH, *C. R. Acord, J. C. Barlow, J. J. Barnard*; WASATCH, *P. R. Daniels*; WASHINGTON, *J. K. Hughes*; WAYNE, *J. M. Hall*; WEBER, *M. S. Burningham, F. W. Boyer*.

## County Home Agents

BOX ELDER, *B. M. Hansen*; CACHE, *B. K. Lemon*; DAVIS, *K. P. Swindle*; DUCHESNE, *M. Merrell*; GARFIELD, *F. H. Bardwell*; JUAB, *V. B. Stevens*; MORGAN, *H. E. Bergstrom*; PIUTE, *R. D. Coates*; RICH, *H. J. Wamsley*; ROOSEVELT, *M. L. Hayes*; SALT LAKE, *B. Palfreyman, N. Burnham*; SAN JUAN, *D. Adams*; SANPETE, *S. S. Tuttle*; SUMMIT, *N. Jensen*; TOOELE, *E. Darley*; UTAH, *J. Eller*; UTAH, *J. J. Poulson, R. Brasher*; WASATCH, *M. R. Bacon*; WASHINGTON, *R. E. Nelson*; WEBER, *M. Martin, R. P. Tippetts*.

\*On leave.

# Utah State University

## Cooperative Extension Service

Office in Agricultural Science 120

USU's Cooperative Extension Service is one of the main divisions of the University and the educational arm of the U.S. Dept. of Agriculture. It was established in 1914 with the passage of the Smith-Lever Act. The Extension Service is sponsored and financed jointly by the Federal, State and County governments. There is a Cooperative Extension Service in the Land-Grant Institution of each state.

*Main functions of the Cooperative Extension Service* are to develop leadership, resourcefulness and initiative among the people, to supply sound information helpful in discovering and solving problems, and to help people become more efficient, increase incomes and raise standards of living. It takes the findings of research to the farms and homes of the State and brings the unsolved problems from the farms and homes to the research workers for solution.

*Extension programs are planned jointly with the people.* The demonstration method of teaching is used extensively. In addition, farm and home visits, group meetings, news articles, publications, personal and circular letters and radio and television programs are all used to get information to the people and to get problems analyzed and solved.

Administratively, the Cooperative Extension Service is a part

of the College of Agriculture. Eight administrative and supervisory personnel and 30 subject matter specialists comprise the staff at the State level. These staff members train, supervise and assist the county Extension agents and local leaders.

County Extension agents are located in 26 of the 29 counties. At present there are 36 county agricultural agents and 26 home agents on the staff.

The Extension program includes work with both adults and youth. On the average, about one-third of the time of Extension workers is devoted to 4-H youth work.

To help get information to the people and to train leaders, the Extension Service sponsors free, non-credit short courses and conferences in various subjects at the University and at other locations throughout the state. These short-courses are usually planned and conducted under the joint sponsorship of the Extension Service and cooperating agencies, organizations and institutions. Field days are also held in cooperation with USU's Agricultural Experiment Station and other organizations.

Please turn the page for a list of the main short courses that are definitely planned for the present fiscal year.

# UTAH STATE UNIVERSITY

## 1958-59 Calendar of

Camps, Clinics, Conferences, Conventions, Expositions, Festivals, Field Days, Institutes, Schools, Seminars, Shortcourses, Tours, Workshops  
(All Dates Subject to Change)

Date	Event	Location
April 26, 1958	Annual Poetry Speaking Festival	USU, Logan

### USU Extension Service Shortcourses, Conferences, Camps

Date	Event	Location
January	Canning Crops Shortcourse	Hotel Ben Lomond, Ogden
January	Turkey Growers Shortcourse	Snow College, Ephraim
January and March	Health Forums.	Various Communities Throughout State
January	Shortcourse for Fish and Game Wardens.	USU, Logan
February	Feed Dealers and Manufacturers Shortcourse & Nutrition Conference.	USU, Logan
February	Young Couples Shortcourse.	USU, Logan
February	4-H Club Leaders Training School.	USU, Logan
March	Dairy Manufacturing Shortcourse.	USU, Logan
March and April	Garden Club Shortcourse.	Various Communities Throughout State
June 9-10	Poultry Shortcourse.	USU, Logan
June 19-21	Older 4-H Club Camp.	USU, Logan
July 10-12	Rural Reading Conference.	USU, Logan
July 15-16	Instruction and Tour for Indians of Uintah Basin.	USU, Logan
August 12-17	Communications Workshop for Iranian Group.	USU, Logan
September	Swine Producers Shortcourse.	Weber College, Ogden
October 14-17	Adult Womens Leadership School	USU, Logan
November 5-6	Dairy Fieldmen's Shortcourse.	USU, Logan
December 6-7	Fruit Growers Shortcourse and Horticultural Convention	Hotel Utah, Salt Lake City



## USU Agricultural Experiment Station Field Days

Date	Event	Location
May 24, 1958 (Tentative)	Orchard Equipment Field Day.	Howell Field Station for Horticulture Research
July 15, 1958 (Tentative)	Wheat Day.	Nephi Field Station, Nephi, Utah
July 18, 1958 (Tentative)	Field Crops Field Day.	Greenville Farm, North Logan
August 5, 1958 (Tentative)	Panguitch Farm Field Day.	Panguitch, Utah
August 8, 1958 (Tentative)	Dairy Day.	Dairy Farm, North Logan
August 15, 1958 (Tentative)	Fruit Varieties Field Day.	Howell Field Station, North Ogden
September 20, 1958 (Tentative)	Flowers and Ornamentals Field Day.	Farmington Field Station, Farmington, Utah
September 5, 1958 (Tentative)	Canning Crops Field Day.	Farmington Field Station, Farmington, Utah

## USU Management Institutes, Conferences, Seminars

### MANAGEMENT INSTITUTE Summer Program 1958

Date	Event	Location
June 11, 1958	Labor Leader's Seminar on Industrial Relations.	USU, Logan
June 18, 1958	Management Seminar on Industrial Relations.	USU, Logan
June 23-26, 1958	Workshop on Conference Leading and Group Development.	USU, Logan
June 30-July 3, 1958	Seminar on Foremanship and Supervision.	USU, Logan
July 7-10, 1958	Workshop on Job Evaluation.	USU, Logan
July 14-18, 1958	Seminar on Functions of Management.	USU, Logan
August 4-8, 1958	Seminar on Management of the Engineering Function.	USU, Logan
August 11-15, 1958	Seminar on Efficient use of the Industrial Engineering Function.	USU, Logan

# MANAGEMENT INSTITUTE PROGRAM

## Major Conferences

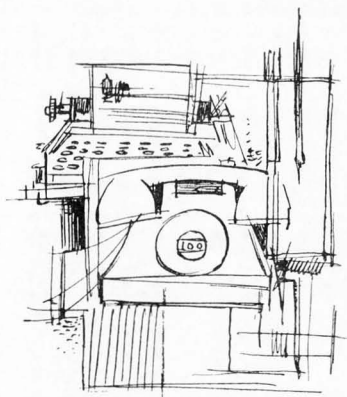
Date	Event	Location
January 14, 1959	Third Annual Conference on Agriculture and Industry	Hotel Utah, Salt Lake City, Utah
March 13, 1959	Eighth Annual Management Conference	USU, Logan
April 10, 1959	Third Annual Industrial Conference	Hotel Ben Lomond, Ogden, USU, Logan
May 15-16, 1959	Fourth Annual Welding Exposition	USU, Logan

## Summer Program of Management Training Seminars Summer 1959

June 12, 1959	Management Leader's Seminar on Industrial Relations and Collective Bargaining.	USU, Logan
June 19, 1959	Union Leader's Seminar on Industrial Relations and Collective Bargaining	USU, Logan
June 22-25, 1959	Workshop on Conference Leading and Group Development.	USU, Logan
June 29-July 2, 1959	Seminar on Foremanship and Supervision.	USU, Logan
July 6-9, 1959	Workshop on Job Evaluation.	USU, Logan
July 13-16, 1959	Seminar on Planning and Control.	USU, Logan
July 20-23, 1959	Workshop on Management Problems of a Small Business.	USU, Logan
July 27-30, 1959	Seminar on Cost Control.	USU, Logan

## USU Summer School Conferences, Clinics, Workshops

Date	Event	Location
June 9-13	Annual National Coaching School	USU, Logan
June 12-July 2	Second Annual Fine Arts Tour of Mexico	USU, Logan
June 9-14	First Annual Tool Engineering Seminar	USU, Logan
June 23-27	Television Education Conference	USU, Logan
June 16-July 18	Demonstration School for Elementary School Children	USU, Logan
July 21-August 1	Aggie Ranger Hike	USU, Logan
July 21-August 22	Demonstration School for the Exceptional Child	USU, Logan
June 16-July 18	School Building Workshop	USU, Logan
June 23-July 1	Annual Summer Music Festival & Clinic	USU, Logan
August 5-7;	Marriage Counseling Workshops	USU, Logan
August 11-12		



# *Information Services and University Development*

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LeRoy A. Blaser, Director

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# Information Services and University Development

DIRECTOR OF INFORMATION SERVICES AND UNIVERSITY DEVELOPMENT, *L. A. Blaser*; EDITOR OF UNIVERSITY PUBLICATIONS, *J. J. Stewart*; UNIVERSITY NEWS EDITOR, *D. C. Dix*; AGRICULTURAL INFORMATION SPECIALIST, *E. O. Haroldsen*; EDITOR OF AGRICULTURAL PUBLICATIONS, *G. L. Harrison*; UNIVERSITY RADIO AND EDUCATIONAL TELEVISIONIST, *B. F. Hansen*; EXTENSION RADIO AND TELEVISION SPECIALIST, *S. L. Brower*; ATHLETIC NEWS EDITOR, *K. W. Klages*; UNIVERSITY PHOTOGRAPHER, *A. L. Hansen*; ASSISTANT EDITOR OF AGRICULTURAL PUBLICATIONS, *N. Collett*; ASSISTANTS IN PROGRAM BUREAU, *J. Sherratt and L. Flinders*

## Office in Information Services and Alumni Building

The prime purpose of USU's public relations program is to foster understanding of the University's aims and accomplishments, so that staff members and the public can more fully appreciate its operations and functions.

Being a public, tax-supported institution, the University has the responsibility of keeping the public informed as to its operations. It can best fulfill this responsibility by utilizing the mass communication media of newspapers, radio and television stations and magazines, and by publishing appropriate bulletins and journals.

The Information Service operates from one central location and includes university news and publications services, agricultural information services, athletic publicity, high school relations, program bureau, development fund and alumni affairs.

Information of immediate interest and importance is disseminated daily and weekly through the press, radio and television. These releases include informational articles and programs of educational worth. They include articles on research in many fields, as well as general campus events and activities.

University publications include:

(1) a monthly University Bulletin series, devoted to the annual Catalog, the Summer School Catalog, the Home Study Catalog and to bulletins featuring the various departments and offerings of the University.

(2) Extension Service Bulletins of an instructional type, in agriculture and homemaking especially.

(3) Agricultural Experiment Station Bulletins, reporting results of research conducted by the University station.

(4) A Monograph Series featuring worthy essays, articles, lectures and speeches of USU faculty members, that are of interest and worth to the public.

(5) *Farm and Home Science*, a quarterly magazine of general statewide distribution, featuring research conducted by the University and its affiliated organizations.

(6) The *Alumnus* magazine published nine times a year, contains news and features for USU Alumni.

The Program Bureau of the Information Services provides educational program services to civic, community, and educational groups including schools. This service consists of student and faculty talent



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and has been well received. The University supplies an average of two programs per day during the school year.

*Development Fund.* The purpose of the Development Fund is to assist the University in providing more effective educational oppor-

tunities to the citizens of Utah, Alumni, and friends of Utah State by encouraging grants, bequests and gifts of money, property, works of art, historical papers and documents, and museum specimens having educational, artistic or historical value, to the University.

*You are invited to request copies of University Catalogs, Bulletins and other literature of interest to you. Phone or write to Director of Information Service, USU, Logan.*

*You are also invited to view and listen to USU programs on various television and radio stations throughout Utah. These include dramatic and informative programs*

*on literature, music, art, history, science, agriculture, home making, hunting and fishing, education and many other subjects of interest and worth. Programs are produced on the USU campuses and in 22 of its County Agents' offices throughout Utah. Consult your newspapers or station for names and times of these programs.*

*Education makes a people easy to lead, but difficult to drive; easy to govern, but impossible to enslave.*



*Utah State University  
Alumni Association*

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Wesley D. Soulier, President

# USU Alumni Association

Wesley D. Soulier, President

LeRoy A. Blaser, Executive Secretary

Office in Information Services and Alumni Building

Utah State University Alumni Association now numbers more than 23,000 members. These members constitute the graduates and former students who have been in attendance here at Utah State, and who are now making an effort to keep in touch with the University and support its activities through the work of the Association. Many of these members now hold important positions in industry and government.

*Purpose.* It is the purpose of the Alumni Association to promote the interests and welfare of Utah State University.

*Membership.* (1) *Regular Member:* All persons receiving degrees, diplomas or terminal vocational certificates from Utah State University, College of Southern Utah, or Snow College are members of the Association upon payment of dues. All graduating students of USU receive a paid-up, two-year membership in the Alumni Association. (2) *Associate Member:* All students who have been regularly enrolled in one of the three aforementioned institutions and have successfully completed any work therein, may become members of the Association upon payment of dues. (3) *Sustaining Member:* All parents of graduates or students and faculty members and others who have shown an interest in the University or the Association may become sustaining members by payment of dues. (4) *Honorary Member:* Persons eligible for honorary

membership are those who have done outstanding service to the Institution and who are recommended for this honor by the Executive Committee, or the Council.

*Dues.* Annual dues are \$2 per year and joint annual dues (husband and wife) \$2.50 per year. Life membership may be obtained singly at \$25.00 or \$35 for a joint membership, both payable in \$5 installments.

*Government.* The governing power of the Association is vested in the Alumni Council, composed of 15 elected members and ex-officio members. The current president of the Senior class and the president of the Associated Student organization are both ex-officio members of the Council. The Alumni Executive Secretary is the official representative of the Association on campus. The President of the Alumni Association is a member of the Utah State University Board of Trustees, as provided by Chapter 5, Article 75-5-0, School Laws, State of Utah.

*Function.* The Alumni Association is the medium through which former students of Utah State are kept in contact and are served after leaving the campus. Efforts are made to maintain a complete record of every alumnus throughout life, and his accomplishments and progress are recorded. Members receive the Utah State *Alumnus*, a magazine published nine months a year, full of Aggie news and re-

ports on the University. The Association maintains Alumni Chapters in all major areas where Aggies are located. Through this local organization, Aggies are kept in contact with each other, and they meet and participate in business and social activities. They likewise assist the University with special projects in their areas. The Association endeavors to keep in contact with all Aggies and assists them in reference and contact problems. Membership in the Association is the best way for an Aggie to demonstrate his interest and support of the University and its program after leaving the campus.

The Alumni Association takes the leadership in sponsoring campus events such as Homecoming, Founders' Day, and the Senior Reception, as well as aiding in other athletic and school events.

*Alumni Association-Library Endowment Fund.* The Library Endowment Trust Fund is a special fund which has been established by the Association. This fund was established from popular subscriptions. Earnings from the fund are given to the University library to aid it in the purchase of books which ordinarily could not be bought from the regular library budget.

## USU's Newest Alumni

(Graduates of Class of 1957)

Those Receiving the Degree  
of Bachelor of Science

### College of Agriculture

Abukishki, Baker Abd M.  
Albaugh, Dale Edwin  
Benson, Mark Keith  
Beutler, Lurn K.  
Black, Iwan M.  
Broadhead, Kenneth Grant  
Bunker, Reed Charles  
Campbell, Richard B.  
Cannon, Alan Munn  
Chamberlain, Lee L.  
Chatelain, Robert Otis  
Childs, Jay Newell  
Cook, Richard Crowther  
Croff, Benjamin Louis  
Crook, Wayne R.  
Doney, Ronald Conrad  
Fife, Norman Dean  
Foremaster, Phillip L.  
Griffin, Halvey Edwin  
Grover, Loren Homer  
Guymon, Ervin Park  
Guymon, Richard Duane  
Hafen, Gregerson H.  
Hall, Rodney Nedo  
Harrison, Robert Leigh

Hendry, Gary Leon  
Holt, William Ralph  
Hoopes, Keith Hale  
Horne, Lawrence Thad  
Hunt, Edward L.  
Jensen, Larry Neal  
Jensen, Ralph Erwin  
Jootanon, Owahit  
Jordan, Harley Allen  
Lindsay, Ben W.  
Loosli, Stanley Lynn  
Madsen, Keith Andrew  
May, Donald Morgan  
Morrill, Terry Hinton  
Moyes, Charles Russell  
Myers, Margo Ann  
Oldham, Mark Elliott  
Orme, Joseph C.  
Ostvig, Jim Hamlet  
Palmer, Don Hurley  
Park, William Laird  
Prestwich, Lyn  
Redden, Boyd J.  
Roberts, Joseph Val Ray  
Robison, Gayland D.  
Sampson, Richard Dewey  
Sehat-Hakimzadeh, Mohammed Ali  
Shand, Donald David  
Skinner, Garald Lester  
Smith, Clyde Reed  
Smith, Glenn Alvin

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Sorenson, Larry G.  
 Southard, Alvin Reid  
 Steele, Robert Que  
 Stenquist, Norris J.  
 Stevens, Allen M.  
 Swainston, Richard Carl  
 Tanner, Norman Dee  
 Taylor, Jarrell Kent  
 Taylor, Richard William  
 Turner, Wendle H.  
 Urie, Albert Lee  
 Vaughan, James Gordon  
 Wilcox, Bert Guy  
 Wilson, Dean Ervin  
 Winchester, Lyman Gene  
 Withers, Russell Vernon  
 Wood, William F.

### College of Business and Social Sciences

Adams, Thomas R.  
 Abbott, Myron S.  
 Al-Sadoon Abdul Karim  
 Alder, Calvin Clyde  
 Allred, Perry Leon, Jr.  
 Alzubaidi, Qassim N.  
 Anderson, Clyde Merlin  
 Anderson, Robert T., Jr.  
 Babos, Robert L.  
 Barrett, Beverly Kay  
 Bates, Charles Richard  
 Baugh, Kenneth Boyd  
 Bernstein, Jerome  
 Bradley, Kenneth Delroy  
 Brann, Louis Paul  
 Breen, Kenneth James  
 Brown, Fred R.  
 Bundy, Jim  
 Burnett, Jack J.  
 Burnside, Robert Scott  
 Carter, Sharon  
 Chandler, Berdett S.  
 Coburn, Calvin H.  
 Condie, James Duane  
 Cook, William Ora  
 Corry, Kristine  
 Cowley, Don R.  
 Crawford, Darrell Boyd  
 Crocco, Eugene M.  
 Cummings, Douglas Ray  
 Daines, LuJuana  
 Dastrup, Neal Lafarge  
 Davis, Alan G.  
 Dixon, Aaron M.  
 Draney, Nolan G.  
 Erickson, Lynn Beutler  
 Frome, Jay N.  
 Fronk, Jack Krey  
 Gephart, Harry Wesley  
 Goddard, Gerald Eugene  
 Godfrey, Gerald Thomas  
 Gossner, Edwin Othmar  
 Hansen, Gary Barker

Hanser, Kenneth Glen  
 Harris, Paul Leroy  
 Hatch, Mike W.  
 Hendricks, Jay Dee  
 Higbee, Bevan J.  
 Hillman, Edith A.  
 Hillyard, Morris R.  
 Horne, Harold O.  
 Howell, Byron James  
 Hunsaker, Leland S.  
 Hunsaker, Shorland G.  
 Jeffs, Beverly Fern  
 Jeppesen, David Lorin  
 Jeppesen, Kay M.  
 Kamdar, Vinodkant H.  
 Kelley, Neal Ellis  
 Kendrick, Ernest Milton  
 Kent, Charles Duane  
 Kent, Grant Samuel  
 Kidd, Clark Jackson  
 Kidd, Lynn D.  
 Kimball, Richard Arthur  
 Kimmitt, Joseph S.  
 Klamm, Charles  
 Latham, Mary Lee  
 Librizzi, Joseph T.  
 Lindsay, Denny C.  
 Lindsay, Lamar June  
 Loosle, Ruby  
 Lund, James Neil  
 Malouf, Terrence G.  
 Marriott, James M.  
 Massaro, Edward Joseph  
 Mathis, Gerald Wallace  
 McCallson, Gaylord A.  
 McClellan, Owen James  
 McFarland, William G.  
 Mecham, Glenn J.  
 Miles, Lawanna  
 Moore, Vern Lenard  
 Mraule, Robert Eugene  
 Naef, Donald Roy  
 Nelson, Gordon Taylor  
 Nelson, Maurice Jan  
 Nielsen, Louis Kay  
 Nielsen, Reece D.  
 Ogden, Kyle Mervin  
 Olsen, Norman W.  
 Olsen, Stanley Gail  
 Oram, Keith Naisbitt  
 Petersen, Devaughn Christian  
 Peterson, Donald Sidney  
 Peterson, Gary Martin  
 Petty, Vern Gordon  
 Pitt, Charles Richard  
 Pond, Delwin Taggart  
 Porter, Lawrence C.  
 Potter, Dawn Earl  
 Preston, Patrick Holmes  
 Proffit, Ray Bruce  
 Quinney, Eldon  
 Rasmussen, Parley Thomas  
 Rich, Blaine B.



Richards, Garth S.  
 Rigby, Sandra Lee  
 Ripplinger, John Hollis  
 Rodenhiser, Paul Alan  
 Ross, Carl Rigby  
 Rupani, Manu L.  
 Saltern, Floyd Edward  
 Sant, Don Raymond  
 Santa Maria, Pierre B.  
 Sargent, Gordon S.  
 Searle, Royce W.  
 Shawa, Kazim Said  
 Showalter, Robert D.  
 Skinner, Dennis E.  
 Slack, Shirleen  
 Smith, George Carlos  
 Smith, Melroy Edwin  
 Smith, William Forrest  
 Stanford, Melvin Joseph  
 Stevens, Audrey  
 Stone, Leroi H.  
 Swensen, Beverly Jean  
 Tate, Dianne Coray  
 Thain, Garrett James  
 Thompson, Dee Jay  
 Tueller, Blaine Carlson  
 Uyeda, George T.  
 Valentine, Jarold C.  
 Wallis, Vernon Virgil  
 Weaver, William Howard  
 Webster, Jack Nelson  
 Welch, Dominic Anthony  
 West, William G.  
 Whipple, Ronald Boyd  
 Williams, Robert B.  
 Wilson, Glenn L.  
 Workman, Dale Horne

### College of Education

Allen, Hugh Arthur  
 Allen, Norma Hector  
 Allen, Warren Madsen  
 Andersen, Ellen  
 Anderson, Douglas Fred  
 Anderson, Elden  
 Anderson, Harold Edwin  
 Anderson, Mary Lusk  
 Andreasen, Clifford R.  
 Atkinson, Frank D.  
 Bachman, Lanell Blaine  
 Bachman, Sallyanne W.  
 Bailey, Joseph Blaine  
 Bankhead, Samuel Clair  
 Barlow, Carol Anne  
 Barrett, Charles Edward  
 Bayles, Nils G.  
 Beatty, James Thomas  
 Beckstead, Quinn M.  
 Benson, Barbara Anne M.  
 Berntsen, Dean Larsen  
 Berry, Lerene Richards  
 Billings, Claire

Bingham, Inez Taylor  
 Bird, Marjean Louise  
 Blackwell, Frances Joanne Coon  
 Blazzard, John Lynn  
 Blood, Helen Lorraine  
 Boyington, Ethel  
 Brown, Marilyn Kay  
 Burr, Francis Ned  
 Burr, Jack F.  
 Bush, Ronald Earl  
 Butler, Theron Bowcutt  
 Buttars, Jack Anderson  
 Call, Amy Brinton  
 Christison, Donna G.  
 Cramer, Joyce  
 Craner, Audrey Reeve  
 Cranmer, Jay Morris  
 Crompton, Gary Thomas  
 Curtis, Marie Anderson  
 Cutler, Elsie Grove  
 Dajani, Yousif Sharif  
 Dalley, LaRue  
 Darling, Patricia  
 Davidson, Emilie  
 Davidson, Joseph Bruce  
 Davis, Ivan Daniel  
 Dearden, Ralph Earl  
 DeLeeuw, Faun  
 Despain, Merrill D.  
 Devries, Norma Eunice  
 Dickson, Rodney  
 Doke, Lois Ann  
 Duncan, James Owen  
 Durham, Bryan C.  
 Dutson, Roldo V.  
 Elsner, Larry Edward  
 Esplin, Torma  
 Evans, Gary Ferd  
 Fail, Annette  
 Farmer, Elaine Reese  
 Folkman, Patricia Jane Wallace  
 Frasier, Nancy Lee  
 Gneiting, Dorothy Ann  
 Godard, John C.  
 Gomm, Opal A.  
 Graff, Scott K.  
 Gray, Gladys A.  
 Griffin, Veloy Eugene  
 Hales, Valda B.  
 Halgren, Dixie Marr  
 Halverson, Robert Carl  
 Hansen, Calvin G.  
 Hansen, Harold Lennis  
 Hansen, Keith D.  
 Hansen, Oertel Hadley  
 Harris, Joan  
 Harris, Luwanna  
 Harris, Roger Lee  
 Hartvigsen, Doris H.  
 Hawkins, George Edward  
 Hawks, Josh Deroy  
 Hickman, Edna Bunnell  
 Hill, Jack Flint

Hurst, Norman F.  
 Hyer, Lucile  
 Isaacson, Robert Lars  
 Jackson, Kathleen  
 Jacobs, Edwin Lewis  
 James, Wallace  
 Jasper, Dale A.  
 Jeffs, Scott Grange  
 Jenkins, Robert Allan  
 Jensen, Ada May Smith  
 Jensen, Beverly R. S.  
 Jensen, Boyd Vernal  
 Jensen, Devon Charles  
 Johnson, Clarice  
 Johnson, Leon Perkins  
 Johnson, Thales Leroy  
 Jones, Althea T.  
 Jones, Lorene  
 Jorgensen, Delma M.  
 Judah, Barbara Renee  
 Judy, Junius V.  
 Jusko, Mitchael R.  
 Keetch, Emily Marrott  
 Kendrick, Karen Gay  
 Kunz, Marilyn  
 Larsen, Drue Allen  
 Larsen, Laura Larae  
 Listello, Lorine C.  
 Lockyer, Joseph Albert  
 MacDonald, Cora Lucile  
 Manning, Ruth Mae G.  
 Maughan, Patsy Ruth  
 McComb, Robert Burke  
 McFarland, Carolyn  
 McKendrick, Joe  
 McMurdie, Maxine C.  
 Melville, Rulon Kent  
 Miller, Kenney Dale  
 Miller, Roy Isaac  
 Moody, Ruby Christensen  
 Moore, Kirk Quilter  
 Morris, Jerry Arthur  
 Mortensen, Anora Bedke  
 Muir, Greta Marie  
 Nelson, Clara  
 Nelson, Peggy Lou  
 Nielsen, Narlynn  
 Nord, Odell Marlyn  
 Olsen, Clair Nash  
 Olsen, Ruth C.  
 Parkin, Dorothy Ellen  
 Petersen, Lois Kaye  
 Peterson, Cary George  
 Petersen, Margaret J.  
 Peterson, Marvin J.  
 Pett, Mary Ray  
 Plaga, Joanne  
 Poulsen, Keith Clem  
 Poulsen, Loel Kent  
 Powell, Anna Stone  
 Price, Calvin A.  
 Prince, Norman J.  
 Pryor, Eva Dene

Quist, Shirley Ivan  
 Rachele, Raymond  
 Raymond, Douglas S.  
 Reading, June Ballard  
 Reeder, Ruth R.  
 Reinkraut, Martin H.  
 Reynolds, Carl C.  
 Reynolds, Ted W.  
 Richardson, Elaine J.  
 Ricks, George Ronald  
 Robinson, Jack Duane  
 Rock, Helen Kathleen  
 Sackett, Richard W.  
 Sadler, Margaret Luke  
 Seeholzer, Theodore F.  
 Siggard, Derral L.  
 Skidmore, A. Leroy, Jr.  
 Slater, Paul W.  
 Slater, Sharon  
 Small, Veressa H.  
 Smith, Edward Parley  
 Smith, Ezra  
 Smith, Samuel Boyd  
 Snapp, Billy D.  
 Solomon, Bryant Alfred  
 Sorenson, David W.  
 Stallings, Janet Fay  
 Stander, Margretta  
 Stephens, Carol G.  
 Stokes, Carol  
 Swasey, Birdie Robison  
 Swenson, Morris J.  
 Taggart, Henry Morgan  
 Tanner, Edna M.  
 Tate, Carolyn  
 Taylor, Lois Dunn  
 Terry, Dewayne A.  
 Thayne, Dawna D.  
 Thomas, Donna Gayle  
 Thompson, Clem Junior  
 Tilley, P. Dale  
 Todd, Ann Knight  
 Torgerson, Janice O.  
 Turner, Beverly Ann  
 VanAlfen, Curtis N.  
 VanVliet, Arthur  
 Venable, Wayne L.  
 Vest, Garth H.  
 Walton, Emma Jean  
 Ward, Janet  
 Weinstock, Wilma I.  
 Whatcott, William John  
 White, Almeda May  
 Wight, Maurine O.  
 Wilde, Shirl Lynne  
 Williams, George B.  
 Willis, Alice Margaret  
 Wilson, Helen Elizabeth  
 Yack, Alreta  
 Ziegler, Esther B.  
 Zollinger, Lela May  
 Zollinger, Helen Burton

## College of Southern Utah Upper Division Graduates

Anderson, Barbara  
Beatty, Grant Dennis  
Benson, James L.  
Call, Elizabeth Manning  
Clove, Mary Sherlene Jensen  
Dotson, Wina Liston  
Gillins, Bernice Carter  
Hall, Mona Rae  
Holman, Eugene R.  
Johnson, Jarvis Burdett  
Lamb, Ruth C.  
Larsen, Lillis Jones  
Lovell, Marlyn  
Matthews, Florence C.  
Olds, Clayton V.  
Olson, Janice H.  
Rogers, Patricia  
Taylor, Carma Arthella  
Tobler, Sharlene  
Tuft, Merradon Iverson

## College of Home and Family Living

Allen, Lila Fae  
Anderson, Ann Elizabeth  
Beckstead, Maralea S.  
Bingham, Alice Anne  
Danielson, Chandra Lynn  
Ferney, Carol Romrell  
Francom, Shirley Ann  
Gibson, Lianne  
Hammer, Sharlene  
Hooper, Karma Jean  
Humpherys, Adele Ralph  
Hutchinson, Varo Christensen  
Jensen, Shirley Davis  
Johnson, Sharon Dee  
Kerkman, Elaine  
Lindhardt, Nina Mortensen  
Magleby, Shanann  
Mitchell, Dixie Howard  
Mumford, Bessie  
Newby, Patricia  
Oman, Carol Noel  
Ostvig, Minnie Patricia  
Parson, Patricia  
Pearson, Beverly Rae  
Peterson, Ruth Degn  
Potter, Ruth Rytting  
Price, Marilyn Jensen  
Randall, Gloria  
Stoddard, Helen K. H.  
Tanner, Ruby Joyce  
Tasso, Ethella Mitchell  
Vollman, Mary Evelyn  
West, Una Jean  
Wright, Hyra Jean Hatch

## University College

Allen, Ferrin L.  
Allen, Sandra  
Amos, Ronald Spence  
Andersen, Ferron Lee  
Anderson, Annette Hatch  
Anderson, Carol  
Anderson, John Richard  
Anderson, Reed J.  
Bateman, Janet  
Beus, Stanley Spencer  
Bingham, Perry Jay  
Blackburn, Victor L.  
Blake, Jay Ralph  
Blau, Adrian Darrell  
Bowles, H. Dean  
Briscoe, Ralph Dean  
Cannon, Richard Douglas  
Carigan, William Everett, Jr.  
Carlson, Elaine P.  
Carman, Karen Gertrude  
Caskey, Floyd H.  
Christensen, Delis I.  
Christiansen, Henry N.  
Clark, Arlo Zane  
Collett, Nita Veloy  
Curtis, Alan Maughan  
Ebert, Anna Mae Hill  
Entwistle, Robert T.  
Evans, Robert Ronald  
Farhad, Akram D.  
Forsberg, Jennett S.  
Gale, Kathleen Haslam  
Gardner, Mervyn Bennion  
Gelnett, Ronald Howard  
Godfrey, Audrey Ann M.  
Griffone, Joanne  
Hafen, Richard Burke  
Hall, Ray M.  
Hansen, Diane  
Hansen, Terry Lee  
Hardy, Leonard Jones  
Hasler, James Richard  
Hill, Sylvia  
Hoelscher, Martha Jane  
Howard, Paul L.  
Hunsaker, Kenneth Burnice  
Johnson, Loreen  
Jung, August Larry  
Keaton, Dixie Lee  
Keyser, Jack Edwin  
Kerr, Clifton Duane  
Knight, Melvin K.  
Lamb, Ronald Bennett  
Larsen, Roger Grant  
Larson, Alma Arden  
Larson, Donald B.  
Lauritzen, Arden W.  
Libby, Joanne P.  
Linde, Marilyn Blackner  
Machen, Dallas

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McComb, Dorothy Holmes  
McLatchie, Eldon S.  
Miller, Marilyn Vivian  
Moore, Irvin Joseph  
Munk, Clayne Elroy  
Munns, Charles Robert  
Nelson, Joyce  
Nielsen, Betty Wilson  
Olsen, Sterling B.  
Olson, Paul C.  
Parker, Glen J.  
Reeder, Arlee Carolyn  
Reese, Lowell Gerald  
Robinson, Judith Karen Bush  
Rudd, Nina Dawn A.  
Skabelund, Dean O.  
Smart, Don Frederick  
Smith, Sidney Diane  
Spencer, Ned D.  
Spenko, Albert J.  
Stuart, LaFarr  
Tocher, Arlen Craig  
Tucker, Joanne Esther  
Turner, John Howard  
Turner, Lewis M., Jr.  
Tyson, Margaret Joan  
Vanliere, Jack, Jr.  
Walker, Jerry Wade  
Walker, Theodore D.  
Ward, Lorraine Barker  
Whitehouse, Velma Wardene  
Whiting, John Heber  
Winterton, Bert W.  
Zobell, Lyman Leross

### College of Forest, Range, and Wildlife Management

#### Forest Management

Boman, Kenneth James  
Burkert, Kenneth C.  
Cahill, Harold Benjamin  
Harvey, Edward Arthur  
Hooper, John Frank  
Shearer, Raymond C.  
Sikorowski, Peter  
Warren, Sam Edgar  
Williams, Gerald

#### Range Management

Corbridge, Eugene L.  
Farnsworth, Clair Gale  
Gibbons, Robert D.  
Heller, Thomas Hubert  
Hirschi, Elvias Birrell  
Huffman, Richard T.  
Husain, Tahir  
Isaacson, Harold E.  
Jennings, Dearden Alma

Jensen, Morgan Snow  
Moore, Thomas Allen  
Rasmusson, Juel B.  
Waddoups, Dell T.

#### Wildlife Management

Angelovic, Joseph W.  
Corn, Donald G.  
Coziah, Calvin Earl  
Gabetas, James, Jr.  
Hall, Victor Misko  
Heiney, Clayton L., Jr.  
Kraai, Keith D.  
Lawler, Robert Edwin  
Masellis, Nicholas  
Melander, William C.  
Murrell, Stuart Lester  
Olson, Harold Frederick  
Pendleton, Donald Lafoy  
Porter, Llewellyn R.  
Pratt, Clarence Edward  
Ritchie, Dee Robert  
Stroops, Eugene D.  
Workman, Gar William

### College of Engineering

#### Civil Engineering

Affifi, Hooshang  
Allen, Robert Warren  
Anderson, Jay Robert  
Anderson, Richard Glen  
Ashdown, Laurence  
Ayoub, Suleiman A. Ibrahim  
Balling, Jack Phelps  
Bigler, Charles Eugene  
Burk, Ralph Banne  
Burton, Joseph Font  
Cooley, Keith Roy  
Davis, Robert Dee  
Dick, Jerald R.  
Edwards, Arden West  
Ferguson, Thomas Angus  
Ford, Duane Burnham  
Gowans, George Andrew  
Higginson, Robert Keith  
Hughes, Trevor Clarke  
Javanalikhorn, Poupach  
Jensen, Fred Christian  
Khan, Aizad N.  
Mahmoud, Abdul Malik  
McQuivey, Lee J.  
Merrell, Joseph Evan  
Mitamura, John  
Nelson, James Clair  
Purnell, Jay C.  
Roberts, Roger L.  
Schrandt, Edward Leon  
StClair, Edward Burton, Jr.  
Stephenson, Carvel B., Jr.  
Sudweeks, Dean Alan

Wilkes, S. Glade  
Williamson, Robert E.  
Wimmer, Wayne W.  
Wise, Roy L.  
Works, Larry J.

# Electrical Engineering

Bauman, Charles Hunt  
Bowen, Merlin  
Checketts, Darrell Allan  
Christiansen, Robert J.  
Craw, Charles Leland  
Faux, John G.  
Hales, Clinton D.  
Hancey, Harold Lamb  
Hansen, Jerry Dee  
Hansen, Robert Leeroy  
Harrison, Blair Herbert  
Judkins, Carlos Dee  
McArthur, Keith Glen  
Miller, Robert  
Nakashige, George  
Olsen, Gordon W.  
Redd, Chester Franklin  
Reid, Don Wallace  
Shumway, Mark P.  
Shupe, D. Merrill  
Smith, Kay Darrell  
Smith, Kent Farrell  
Smith, Wallace Kay  
Smith, William G.  
Tatsugawa, Shoji  
Tracy, Merlin A.  
Westergard, Wayne O.

# Tool Engineering

Anderson, George L.  
Bjorkman, Del Rey C.  
Bowman, Roy Ross  
Burnett, Ellis James, Jr  
Cox, John Allan, Jr.  
Harvey, John J.  
Mortensen, Buddy Lee  
Myers, Lewis Dee  
Rhodes, Robert Morris

# Industrial Education

Benson, Keith D.  
Bushman, Burl Jesse  
Carter, Russell Keith  
Cox, William E.  
Dutson, Elwood  
Edgel, Willis John  
Evans, Ralph Thomas  
Francis, Richard Dee  
Hall, Lloyd Frederick  
Handy, Elgin Dee  
Horsley, Grant  
Kirby, Reg Davis  
Kirkham, Thad G.  
Lowe, Sterling C.

Nielson, Ralph Dell  
Robinson, Willis  
Stephens, Ronald J.  
Sumida, Paul Teruo  
Tano, James  
Thatcher, Reed Hill  
Tyrrel, Jerry H.  
Woodward, William Allen

# Industrial Technology

Bull, John Douglas  
Carnahan, Lafayette E.  
Davis, Paul Douglas  
Deem, Gene F.  
Erickson, Dennis P.  
Fridal, Norwood Von  
Goodrich, Gary Maurice  
Grier, Robert Ellis  
Hamamoto, Joseph Mitsuo  
Hansen, Milton W.  
Himes, Hal Ivan  
Johnson, Gordon Varno  
Larcher, Earl Lynn  
McCurtain, Bruce Alan  
Mecham, Kay Lyman  
Menzies, Donald Brian  
Morris, Harold Marlo  
Olney, Robert Mack  
Parkinson, Joseph L.  
Perry, George Henry  
Rubin, Allen J.  
Schaaf, Hawley Lincoln  
Sessions, Foss B.  
Spencer, Donnell  
Stevens, F. Bruce  
Taylor, Raughn Earl  
Wade, Wallace Dean  
Weston, James Richard  
Wilde, Kenneth J.  
Wiser, James G.

# Two-Year Certificates of Completion in Secretarial Science

Kent, Karma May  
Peterson, Deanna

# Commissions in the Military Service

Graduates of the Reserve Officers' Training  
Corps Presented a Commission as Second  
Lieutenant, United States Army Reserve

Alder, Calvin C.  
Anderson, Richard C.  
Baugh, Kenneth B.  
Blake, Jay R.  
Bauman, Charles  
Bowman, Roy R.  
Bradley, Kenneth D.



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Bull, John D.  
Bundy, Jim A.  
Buttars, Jack A.  
Christiansen, Henry N.  
Davis, Ivan D.  
Dickson, Rodney  
Draney, Nolan G.  
Durham, Bryan C.  
Edwards, Arden W.  
Evans, Gary F.  
Ford, Duane B.  
Griffin, Velay E.  
Guymon, Ervin P.  
Hansen, Gary B.  
Hansen, Kenneth G.  
Harris, Roger L.  
Hendry, Gary L.  
Hooper, John F.  
Jeppesen, Moses K.  
Jung, August L.  
Kimball, Richard A.  
Larsen, Roger G.  
Larson, Douglas S.  
Loosli, Stanley L.  
Malouf, Terrence G.  
Marriott, James M.  
Martin, Jerry R.  
Mecham, Glenn J.  
Merrill, Derwin C.  
Miller, Robert  
Moore, Irvin J.  
Nord, Odell M.  
Ogden, Kyle M.  
Olsen, Norman W.  
Porter, Lawrence C.  
Proffit, Ray B.  
Raymond, Douglas S.  
Richards, Garth S.  
Ripplinger, John H.  
Roberts, Joseph V.  
Saltern, Floyd E.  
Sant, Donald R.  
Smith, William G.  
Stephenson, Carvel J., Jr.  
St. Clair, Edward B., Jr.  
Stevens, Frank B.  
Stevens, Merwin A.  
Tano, James  
Turner, Lewis M., Jr.  
Webster, Jack N.

Graduates of the Reserve Officers' Training  
Corps Presented a Commission as Second  
Lieutenant, United States Air Force Reserve

Adams, Thomas R.  
Ashdown, Laurence  
Bingham, Perry J.  
Burkert, Kenneth C.  
Chamberlain, Lee L.  
Cooley, Keith R.  
Curtis, Alan M.  
Evans, Robert R.

Goodrich, Gary M.  
Gossner, Edwin O.  
Hall, Rodney N.  
Hughes, Trevor C.  
Kelley, Neal E.  
McCallison, Gaylord A.  
Reese, Lowell G.  
Sargent, Gordon S.  
Smith, Wallace K.  
Smart, Don F.  
Stuart, LaFarr  
Vaterlaus, Thomas D.  
Weston, James R.  
Whiting, John H.  
Winchester, Lyman G.  
Wood, William F.

### School of Graduate Studies

#### Master of Education Degree

Cornelius, Russell B.  
Ferrin, Karl Johnson  
Hibbert, Julian Moroni  
Jorgensen, Eugene G.  
Marshall, Kenneth  
Olson, Helmer A.  
Peterson, Carl Dean  
Stock, Paul Mondell

#### Master of Science Degree

Albrechtsen, Rulon S.  
Alrayis, Abdul Karim  
Anderson, William Levere  
Arave, Clive Wendell  
Ashcroft, Gordon Biggs  
Athay, Morris B.  
Barker, Leroy N.  
Bickmore, Robert Wallace  
Blair, Paul V.  
Blank, Carl Herbert  
Bolingbroke, Cleve Smith  
Bowman, Charles C.  
Bulkley, Ross Vivian  
Burton, Kathleen Powell  
Bybee, Calvin Reid  
Campbell, Allen Ernest  
Carlsen, Gary H.  
Carter, David Lavere  
Choules, George Lew  
Cockrill, John Calvin  
Condie, James McMurrin  
Debano, Leonard F.  
Durham, Reed Connell, Jr.  
Ewing, Gordon J.  
Eyre, H. Dean  
Forrest, Dee Rhodes  
Golesorkhi, Nasser  
Goodey, Darwin Joseph  
Haniuk, Einard Stephen  
Hansen, Gerald Edwin  
Hansen, James Edward

Haslem, Dean W.  
 Haynie, Anthon V., Jr.  
 Hurd, Dean Wayne  
 Ibrahim, Kamal Moustafa  
 James, David Winston  
 James, Lynn Ferrin  
 James, Sydney Carter  
 Jensen, Carlyle Lorenzo  
 Jensen, Heber Maughan  
 Jensen, Norma  
 Jenson, Evan D.  
 Johnson, Clifton Welby  
 Jorgensen, Leroy Israel  
 Klett, Albert Thomas  
 Lambson, Leslie Lavon  
 Johnson, Perry Bruce  
 Larsen, Randolph Lamar  
 Lawson, S. Thomas  
 Lay, Don C.  
 Lepper, B. Edward  
 Lindeborg, Karl H.  
 Lindley, Earl L.  
 Lyman, Clisbee Nielson  
 Marshall, John A.  
 Matheson, Keith Isom  
 Mitton, George Leroy  
 Molenda, John Richard  
 Morgan, Robert W.  
 Moyes, Earl Leroy  
 Nef, Clyde Edwin  
 Nilson, Kay M.  
 Parcher, Robert Lee  
 Peaden, Richard N.  
 Petersen, Molen Larry  
 Peterson, Floyd W.  
 Peterson, Joseph Louis  
 Prammani, Prapath

Reavis, C. Ben  
 Reeder, Ray M.  
 Reinosa Fuller, Jose Angel  
 Reynolds, Temple Allison, Jr.  
 Rice, Lawrence H.  
 Rich, Amasa McKay  
 Schimmelpfennig, Dale  
 Sept, Eafon Bob  
 Simmons, John Robert  
 Slaugh, Owen  
 Sloat, Wilbur Leonard  
 Sorensen, Philip Edward  
 Stegelmeier, Marlene  
 Stewart, Gordon Leroy  
 Sugden, Lawson G.  
 Sutter, Harald  
 Taylor, Robert Ellis  
 Taylor, Robert Louis  
 Theurer, Jessop Clair  
 Thomas, Glenn  
 Trost, William Arlo  
 Walker, George Cottam  
 Wallis, Carl R.  
 Wilding, Morris Dean  
 Williams, Max W.

### Doctor of Education Degree

Christiansen, Leon Franklin  
 Rogers, Milford Shockley

### Doctor of Philosophy Degree

Beaton, James Duncan  
 Clanton, Donald Cather  
 Goodarzy, Karim  
 Kinsinger, Floyd Elton  
 Peterson, Edwin Loose

*The future is not in the hands of  
 fate, but in ours.*

*Teamwork is as essential in the  
classroom as it is on the athletic  
field.*

# Utah State University Faculty For 1958-59

The following USU Faculty list contains: the faculty member's name, the year he first joined the USU staff (not necessarily in present position); his present academic rank and position; the degrees he holds, the year these were received and the school from which received; a brief summary of his training, experience or/and accomplishments as related to his present position at USU.

(See also lists of Emeritus Faculty, College of Southern Utah Faculty, Snow College Faculty, Federal Collaborators stationed at USU, and USU group in Iran.

**CHASE, DARYL** (1945) President; Professor; BA 1927 U of U; MA 1933 and PhD 1936 U of Chicago; Director of LDS Collegiate Institutes 1936-45. Appointed President of USU Dec. 3, 1954.

**ABRAMS, MILTON C.** (1949) Librarian, Asso. Prof. BS 1948 and MS 1952 USU. Graduate work at Denver U, and U of Utah.

**ACORD, CLAIR R.** (1947) Chrm., Utah County Extension Service Office, County Agricultural Agent; Ext. Asso. Prof. BS 1937 USU, MS 1956 U of Illinois. Listed in "National County Agents Directory," and "Vo-Ag-County Agents Directory," Articles in "Journal of Animal Science."

**ADAMS, DORIS MAE** (1957) County Home Agent. BS 1944 U of U.

**ALLEN, BERT** (1940) Head of Photographic Service; Instr. in Photography. Graduated from White School of Photography in early 20's; took advanced work with Mortensen in 1946, Advanced Color Photography at the Bartlett School of Portraiture, 1949. Critic for the Photographic Society of America. Author of articles on different phases of photography.

**ALLRED, A. FULLMER** (1945) County Agricultural Agent; Ext. Asso. Prof. BS 1938 BYU.

**ALLRED, KEITH REID** (1957) Asst. Prof. of Agronomy. BS 1951 BYU. PhD 1955 Cornell U. Listed in "American Men in Science" Articles in "Farm Research," Cornell U Agr. Exp. Station Bulletins, "Agronomy Journal" and "Farm and Home Science."

**ANDERSON, JAY O.** (1951) Asso. Prof. of Poultry Husbandry BS 1943 USU, MS 1948 and PhD 1950 U of Maryland. Listed in "American Men in Science" Articles in "Poultry Science," "Journal of Nutrition," "Farm and Home Science."

**ANDERSON, ROICE H.** (1947) Asso. Prof. of Agricultural Economics. BS 1935 U of Wyoming, MS 1941 and PhD 1943 Cornell U. Author of bulletins and articles on economics and marketing of poultry and poultry products, published as Utah Agricultural Exp. Station Bulletins, in "Farm and Home Science," "Turkey World," and "Intermountain Food Retailer."

**ANDERSON, WENDELL B.** (1947) Asso. Prof. of Political Science. BS 1935, MS 1940 USU, LLB 1941 George Washington U. Graduate student Oxford University and U of So. California; Attorney-at-Law; member Utah Bar and District of Columbia Bar.

**ANGUS, ROBERT** (1954) Major USAF; Prof. of Air Science. BS 1950 Louisiana State U.

**ARGYLE, RELL F.** (1954) County Agricultural Agent; Ext. Asst. Prof. BS 1940 USU, Graduate work BYU.

**ARRINGTON, LEONARD J.** (1946) Asso. Prof. of Economics. BA 1939 U of Idaho, PhD 1952 U of No. Carolina, postdoctoral research at Huntington Library. Listed in "American Men of Science," Author of "Great Basin Kingdom: An Economic History of the Latter-day Saints," four chapters in "The History of a Valley, Cache Valley, Utah-Idaho," and "Orderville, Utah: A Pioneer Mormon Experiment in Economic Organization." Articles in "Journal of Economic History," "Economic History Review," "Business History Review," "Rural Sociology," "Pacific Historical Review."

**BACON, MARY R.** (1948) County Home Agent; Ext. Asso. Prof. BS 1928 U of U.

**BORG, WALTER R.** (1957) Prof. of Education and Psychology. BA 1943 San Diego State C, MA and PhD 1948 U of California. Articles in "Journal of Educational Psychology," "Journal of Educational Research," "Educational and Psychological Measurement," "Journal of Applied Psychology," "Modern Language Journal."

**BAGLEY, JAY M.** (1955) Asst. Prof. of Civil and Irrigation Engineering. BS and CE 1952 and MS 1953 USU. Articles in "Better Farming Methods," "Utah Farm and Home Science," "Irrigation Engineering and Maintenance," Utah Agricultural Exp. Station Bulletin. Associate member American Society of CE, American Society of Agricultural Engineers.

**BAHLER, THOMAS L.** (1949) Asso. Prof. of Zoology and Physiology. BA 1943 C of Wooster; PhD 1949 U of Wisconsin. Articles in "Journal of Animal Science," "Journal of Agricultural and Food Chemistry."

**BAIRD, GLENN T.** (1946) State 4-H Club Leader; Asso. Prof. BS 1935 USU, Graduate work at USU and Cornell U.

**BAKER, CECIL H.** (1950) Basketball Coach; Asso. Prof. BS 1925 USU. Attended coaching summer school for several years at USU and U of U.

**BARDWELL, FLORA H.** (1950) County Home Agent; Ext. Asst. Prof. BS 1940 BYU.

**BARKER, JAMES R.** (1937) Asst. Prof. of Civil Engineering. BS 1921 USU. Graduate work at U of Montana. Inst. at U of Montana 1921-23. Irrigation Specialist for USU Extension Service 1947-48, 1952-55, Irrigation Specialist for U of Nebraska 1950-52.

**BARLOW, JOEL C.** (1946) Ext. Asst. Prof. County Agricultural Agent. BS 1938 USU; Graduate work at Oregon State C and USU.

**BARNARD, JOHN J.** (1936) County Agricultural Agent. Ext. Asst. Prof. BS 1933 USU.

**BATE, ELSA B.** (1931) Head, Department of Household Administration; Prof. of Home and Family Living. BS 1921 and MS 1931 Kansas State C; PhD 1948 State of Iowa. Listed in "Who's Who of American Women."

**BATEMAN, GEORGE Q.** Asso. Prof. BS 1922 USU. Agent for Bureau of Plant Industry summer of 1919, 1920, 1921, 1922; tester for Dairy Herd Improvement Association 1922-1924; Agent with Dairy Research Branch USDA 1931-1946; listed in "American Men of Science". Author or co-author of more than

50 Agricultural Exp. Station bulletins and articles in "Farm and Home Science," "Journal of Dairy Science," "Agriculture and Food Chemistry."

**BAUER, NORMAN** (1953) Asso. Prof. of Chemistry. BS 1937 U of California, MS 1939 and PhD 1941 U of Michigan. Postdoctoral research U of Michigan. Listed in "American Men of Science;" Co-author of "Refractometry" and "Density" in Weissberger's "Technique of Organic Chemistry;" articles in "Encyclopaedia Britannica," "Encyclopedia of Chemical Technology," "Journal of the American Chemical Society," "Journal of Chemical Physics," "American Journal of Physics."

**\*BECKSTRAND, GORDON** (1950) Asst. State 4-H Club Leader; Asst. Prof. BS 1950 USU.

**BEECHER, ASA L.** (1945) Acting Registrar and Veterans' Coordinator. Attended Henger's Business College 1931-32; Twelve years' experience in industry and Civil Service.

**BELL, JAMES A.** (1957) Asst. Prof. of Vet. Science. BS 1952 USU, DVM 1956 Colorado State U. Engaged one year in private practice of Vet. Medicine.

**BELL, WILLIAM HAROLD** (1924) Prof. of Business Adm. BS 1923 and MS 1931 USU. Assistant Registrar 1924-29; Registrar 1929-1955 at USU. Graduate work at U of Oregon.

**BENDIXSEN, KAY R.** (1952) Ext. Asst. Prof.; County Agricultural Agent. BS 1951 and MS 1952 USU.

**BENNETT, JAMES A.** (1945) Prof. and Head, Dept. of Animal Husbandry; BS 1940 and MS 1941 USU, PhD 1957 U of Minnesota. Author of the Utah Agriculture Exp. Station Bulletins; "Journal of Animal Science," "Proceedings of Western Section of American Society of Animal Production."

**BENNETT, WILLIAM H.** (1937) Asst. Director of Extension Service; Prof. of Agronomy. BS 1936 USU, MS 1948 and PhD 1957 U of Wisconsin, Listed in "American Men of Science;" Author of "Fifty Years of Dryland Research at Nephi Field Station;" Articles in "Sixth International Grasslands Proceedings."

**BERGER, ROBERT L.** (1957) Asst. Prof. of Physics. BS 1950 Colorado State U, MS 1953 and PhD 1956 Pennsylvania State U. British-American Exchange Fellow, Cambridge University, 1956-57; Author of "Journal of American Chemical Society."

**BERGSTROM, HELEN** (1953) Ext. Asst. Prof., County Home Agent. BS 1939 USU.

\*On leave



**BEULTER, G. LEON** (1954) Inst. in Library Science. BS 1950 USU.

**BEYERS, JOHN M.** (1957) Asst. Prof. of Languages and English. BA 1949 and MA 1953 U of U. Graduate studies at U of So. California and U of U.

**BIDDULPH CLYDE** (1946) Prof. of Physiology. AB 1936 BYU, PhM 1939 and PhD 1940 U of Wisconsin. Listed in "American Men of Science," Articles in "Anatomical Record," "American Journal of Physiology, Endocrinology," "Journal of Experimental Zoology," "Journal of Nutrition."

**BIGGS, ERNEST O.** (1944) County Agricultural Agent. Ext. Asst. Prof. BS 1926 USU. Graduate work 1937 U of So. California. Listed in "LDS Educator."

**BISHOP, A. ALVIN** (1946) Prof., Civil and Irrigation Engineering. BS 1934 and MS 1938 USU. Member of American Society of CE, Chairman of ASCE Irrigation Division Committee on Consolidation and Betterment of Irrigation Systems; irrigation consultant in foreign countries involving travel around the world for United Fruit Company, Food and Agricultural Organization of United Nations, and Aichi Irrigation Public Corporation of Japan.

**BLACK, ASA C.** (1956) Colonel, Dept. of Military Science; Prof. of Military Science and Tactics. BS 1933 Alabama Poly Technical Institute, Graduate studies at Columbia U.

**BLACK, THEREL R.** (1950) Asso. Prof. of Sociology; Rural Sociologist. BS and BA 1939 BYU, MA 1941 Louisiana State U, PhD 1951 U of Wisconsin. Author of Agricultural Experiment Station Bulletins, and Articles in "Rural Sociology" and "Farm and Home Science."

**BLAKE, JOSEPH T.** (1956) Asst. Prof. of Veterinary Medicine. BS 1949 BYU, MS 1950, PhD 1955 and DVM 1956 Iowa State C. Listed in "Who's Who in American Education;" Articles in "Journal of Dairy Science," "Journal of Animal Science," "American Journal of Veterinary Medicine."

**BLANCH, GEORGE T.** (1934) Prof. and Head, Dept. of Agricultural Economics; Prof. of Agricultural Economics. BS 1930 and MS 1931 USU, PhD 1941 Cornell U. In "Who's Who in America;" author or co-author of 40 Agricultural Exp. Station Bulletins and Special Reports, and 30 articles published in "Farm and Home Science," and other journals.

**BLASER, LEROY A.** (1952) Director of Information Services and University Development; Executive Secretary of the Alumni Association. BS 1936 and MS 1944 USU, EdD

1955 U of California. Co-author of "Curso de Encadernacao," Vols. 1 and 2, published by Brazilian Ministry of Education; Instructional materials specialist for workbook and textbook series in industrial education and co-author "Elements of Supervision," Leaders' Manual, California State Dept. of Education; Editor, Utah State "Alumnus."

**BOOTH, THORNTON Y.** (1953) Coordinator, Liberal Studies Curriculum; Asso. Prof. of English. AB 1941 BYU, PhD Stanford U. Attended Armed Forces Information and Education School for ten weeks. Listed in "Directory of American Scholars."

**BOSEMAN, JOHN J.** (1957) S/Sgt USAF; Library, AFROTC Det.

**BOYER, FAY W.** (1955) Asst. County Agricultural Agent. BS 1950 USU. Graduate student USU. Inst., Weber College.

**BOYLE, WILLIAM S.** (1945) Prof. of Botany. BS 1937 BYU, MS 1939 and PhD 1943 U of California. Postdoctoral work at U of Wisconsin. Listed in "American Men of Science;" author of "Principles and Practice in Plant Cytology;" articles in "Journal of Heredity," "Genetics," "American Journal of Botany."

**BRADY, JOSEPH S.** (1956) SFC, Dept. of Military Science; Asst. Custodian of Military Property.

**BRASHER, RUTH** (1953) Asst. Home Agent; Ext. Asst. Prof. BS 1951 BYU.

**BRAZILL, GEORGE M.** (1954) M/Sgt USAF, Supply Sgt. AFROTC Det.

**BRITE, J. DUNCAN** (1933) Prof. of History. BA 1922 U of Wyoming, MA 1924 and PhD 1937 U of Chicago. Postdoctoral research in German State Archives. Listed in "Who's Who in America," "Directory of American Scholars," "Who's Who in the West."

**BROADBENT, DEE A.** (1938) Business Manager and Treasurer; Prof. of Agricultural Economics and Marketing. BS 1936 USU, MS 1938 U of Illinois. Graduate studies U of Illinois. Articles in "Agricultural Situation," "Farm and Home Science;" Agricultural Station Bulletin.

**\*BROADBENT, MARDEN** (1938) Supervisor of County Agents. Asso. Prof; BS 1937 USU, MS 1951 U of Illinois.

**BROWER, STEPHEN L.** (1950) Extension Radio and TV Specialist; Asst. Prof. BS 1949 and MS 1950 USU. Graduate studies at U of Maryland.

\* On leave

**BUCK, RULON W.** (1949) County Agricultural Agent; Ext. Asst. Prof. BS 1948 and MS 1953 USU.

**BUDGE, PEARL S.** (1947) Asst. Prof. of Education. BS 1927 and MS 1956 USU. Articles in "English Journal;" member of Utah Language Arts Committee; Co-editor, "Utah Guide in Secondary School English."

**BULLEN, JOHN SAMUEL** (1954) Instr. in English. BS 1950 USU, MA 1955 Stanford U. Doctoral work at Stanford.

**BURGOYNE, DAVID A.** (1912) Asst. to Director of Agricultural Experiment Station; Assoc. Prof. BS 1919 USU, MS 1937 U of Illinois. Listed in "Who's Who in the West;" Articles in Utah Farmer, Co-author of *Pioneering in Western Agriculture* Utah Station Bulletin 282.

**\*BURKE, CASEEL D.** (1949) Asso. Prof. of Education, BS 1939, MS 1948 USU, EdD 1954 U of California.

**BURNHAM, NORMA** (1956) Consumer Marketing Information Agent; Ext. Asst. Prof. BS 1950 USU.

**BURNINGHAM, MELVIN S.** (1945) County Agricultural Agent; Ext. Asso. Prof. BS 1937 USU.

**BURTENSHAW, RAY** (1944) County Agricultural Agent, Ext. Asst. Prof. BS 1940 USU, Graduate work Colorado State C. Asst. County Agricultural Agent 1944-50; AAA program 1940-44, San Juan Co. Graduate Dixie College 1937. President of Utah County Agents Assn., 1957-58.

**\*BURTON, THEODORE M.** (1943) Professor of Chemistry. AB 1932 and MA 1934 U of U, PhD 1951 Purdue U.

**BUTCHER, JOHN E.** (1955) Asst. Prof. of Animal Husbandry. BS 1950 and MS 1952 Montana State C., PhD 1956 USU. Articles in "Farm and Home Science" and "Journal of Animal Science."

**BYERS, JACK A.** (1957) Asst. Prof. of Theatre Arts in Dept. of Fine Arts. AB 1953 and MA 1957 San Jose State C.

**CAINE, ANN C.** (1943) Inst. in Library Science. BS 1945 USU.

**CALDER, HOWARD BENNION** (1956) Asst. Prof. of Business Administration. BS 1937 USU, MBA 1939 Harvard. Inst. in Economics at BYU 1940-41.

**CALL, ANSON B., JR.** (1928) Asso. Prof. of Horticulture; Ext. Specialist. BS 1927 and MS 1928 BYU. Asst. County Agent, 1928-1935; County Agent, 1935-54. President, Utah

County Agents Assn., 1934-35, 1953-54; Secretary, Utah State Horticultural Society 1954-57; Chairman, Utah Junior Turkey Show 1948-54.

**CALL, W. VOSCO** (1955) Asst. Professor of Theatre Arts in Dept. of Fine Arts. BS 1951 USU. Graduate work U of Washington.

**ELWIN F. CAMMACK** (1957) Instr. of Mathematics. BS 1950 Ricks C, MEd 1957.

**CANNON, MELVIN C.** (1947) Head, Dept. of Chemistry; Prof. BS 1933 and MS 1938 U of U, PhD Boston U, Postdoctoral Studies U of Pittsburgh and Illinois Institute of Technology. In "American Men of Science," "Leaders in American Science," "Directory of American Chemical Society;" articles in "Analytical Chemistry," "American Machinist."

**CANNON, NORMAN S.** (1947) Asso. Prof. of Business Administration and Accounting, BS 1938 U of U, MS 1939, PhD 1957 Columbia U, CPA 1950 State of Utah.

**CANNON, ORSON S.** (1948) Prof. and Head, Dept. of Botany and Plant Pathology. BS 1935 and MS 1937 USU, PhD 1943 Cornell U. Listed in "American Men of Science," "Who Knows and What;" articles in The Pennsylvania State C. Extension Leaflets, "The Food Packer," "Farm and Home Science," Federal Collaborator at USU 1948-57.

**CARLISLE, JOHN C.** (1937) Dean, College of Education; Prof. and Head, Dept. of Education. BS 1926 U of U, MA 1935 and EdD 1938 U of California. Listed in "Who's Who in America" and "Who's Who in American Education." Articles in UEA Review.

**CARSON, J. D.** (1952) Asso. Prof. of Poultry Husbandry. BS 1947 Colorado State C. PhD 1953 U of California. Listed in "American Men in Science." Articles in "Poultry Science," "Norbest Turkey News," "Turkey World," "Farm and Home Science," "The Poultryman."

**CARTER, DON C.** (1948) Prof. and Head, Dept. of Family Living and Child Development. BS 1940 U of U, MSW 1947 U of So. California, EdD 1955 Columbia U. Articles in "Farm and Home Science" and "Marriage and Family Living."

**CARTER, PAUL B.** (1956) Asst. Prof. of Bacteriology and Public Health. BS 1948, MS 1950 and PhD 1955, U of U. Inst. at U of U 1950-56. Articles in "Journal of Immunology."

**CARTER, PEARL J.** (1943) Inst. BS 1934 and MS 1948 USU.

**CASTRO, JOSE T.** (1954) M/Sgt USAF, Training NCO AFROTC Det.

\*On leave.

**CHADWICK, DUANE G.** (1957) Asst. Prof. of Electrical Engineering. BS 1952 USU, MSEE 1957 U of Washington. Taught at Seattle U 1954. Employed at Boeing Airplane Co. four years.

**CHATELAIN, JACK E.** (1957) Asst. Prof. of Physics. BS 1947 and MS 1948 USU, PhD 1957 Lehigh U. Member American Physical Society.

**CHILD, RAWSON D.** (1948) Asst. Prof. of Tool Engineering. BS 1949 and MS 1953 USU. Training at Henry Ford Trade School and US Navy engineering school.

**CHRISTENSEN, PAUL D.** (1954) Asst. Prof. of Agronomy; Extension Soil Conservationist. BS 1937 BYU, MS 1948 USU, PhD 1950 Rutgers U. Listed in "American Men of Science."

**CHRISTENSEN, RONDO A.** (1957) Asst. Prof. Agricultural Economics. BS 1954 USU, MS 1955 and PhD 1957, Cornell U.

**CHRISTIENSEN, JERALD E.** (1946) Prof. of CE. BS 1927 USU, MS 1928 and CE 1935 U of California. Listed in "American Men of Science," "Who's Who in America," "Who's Who in Engineering," and "Who's Who in American Education." Author of U of California and USDA technical bulletins and circulars.

**CIVILLE, LEWIS A.** (1956) Asst. Prof. of Military Science, Director of Military Science Dept. Graduate Pomona Jr. C., Chaffee Jr. C., U of California.

**CLARK, ELMER C.** (1952) Asst. Prof. of Poultry Husbandry, Extension Specialist. BS 1950 USU.

**CLARK, CHARLES R.** (1955) Major, Army Corps of Engineers; Director of the Basic Military Science program; Asst. Prof. of Military Science and Tactics. BS 1944 U of Wisconsin, MS 1957 USU. Graduate Command Leadership Course. Listed in "Directory of the Society of American Military Engineers."

**CLARK, CLAYTON** (1937) Prof. of Electrical Engineering. BA 1933 USU, EE 1947 and PhD 1957 Stanford U. Article in "Nature." Colonel in US Army Signal Corps Reserve; Service training and experience in radar, guided missile propulsion and guidance, and nuclear weapons.

**CLARK, STERLING F.** (1955) M/Sgt, Dept. of Military Science; Sergeant Major.

**CLEMENT, LLOYD A.** (1951) County Agricultural Agent, Ext. Asst. Prof. BS 1954 USU. Member of National Assn. of County Agricultural Agents, American Economic Association; articles in "Federal Extension Service Review."

**COATES, RUTH D.** (1946) County Home Agent; Ext. Asst. Prof. BS 1943 USU.

**COCHRAN, GEORGE W.** (1948) Prof. of Botany and Plant Pathology. BS 1941 and MS 1942 Kansas State C., PhD 1946 Cornell U. Articles in "Journal of Agricultural Research," "Farm and Home Science," "Journal Applied Physics."

**COLE, LARRY S.** (1939) Prof. and Head, Dept. of Electrical Engineering. BS 1940 U of U, MS 1945 USU, EE 1950 Stanford U. Listed in "Who's Who in Engineering," "Institute of Radio Engineers Directory." Member of IRE, Sigma Xi and Sigma Tau; articles in "Electronics."

**COOK, C. WAYNE** (1940) Prof. of Range Management. BS 1940 Kansas State C., MS 1942 USU, PhD 1950 Texas A & M. Listed in "American Men of Science," "Who's Who in American Education," "Who's Who in the West" and "Leaders in American Science." Articles in "Journal of Animal Production," "Journal of Range Management," "Journal of Forestry," "Journal of Ecology," and "Ecological Monographs." Recipient of Hablitzelle National Award in Agricultural Sciences in 1953.

**CORDON, WILLIAM A.** (1956) Asso. Prof. of Civil Engineering. BS 1935 USU. Graduate work Colorado U. Listed in "Who's Who in Engineering" and "Who Knows What;" co-author of "Materials of Construction;" articles in "Journal of the American Concrete Institute," "Proceedings of the World Power Conference."

**CULMSEE, CARLTON F.** (1945) Dean, University College; Prof. of Journalism. BS 1932 BYU, MA 1937 and PhD 1940 State U of Iowa. Research and teaching 1955-56, National Chengchi University, Formosa. Listed in "Who's Who in America," "Directory of American Scholars" and "Who's Who in American Education." Officer in US Navy 1942-45. Articles in "Quill," "Journalism Quarterly," "New York Times Magazine," "Western Humanities Review," "Free China Review," "New Leader." Editor of "Utah Sings," Vol. II.

**DAINES, SPENCER H.** (1943) Asso. Prof. of Engineering. BS 1942 USU, MS 1950 Kansas State U. Rural Electrification Adm., St. Louis, Mo. 1942-43.

**DALBY, MAX F.** (1957) Director of Bands; Asst. Prof. of music in Dept. of Fine Arts. AB 1942 BYU, MA 1950 San Diego State C. Graduate work USU and U of U. Articles in "Utah Music Educator," "California Music Educators' Assn. News" and "Selmer Bandwagon."

## 292 USU — Faculty

**DANIEL, T. W.** (1944) Prof. of Forest Management; Director of Clarke McNary Tree Nursery. BS 1934, MS 1936, PhD 1942 U of California. Fulbright Research Scholar to Austria 1951-52. Listed in "American Men of Science," "Who's Who in America," "Who Knows and What." Articles in "Journal of Forestry" and "Utah Academy of Science." Chairman, Division of Silviculture Soc. American Foresters 1950.

**DANIELS, PAUL R.** (1953) County Agricultural Agent; Ext. Asst. Prof. BS 1948 USU.

**DARLEY, ELIZABETH** (1954) County Home Agent; Ext. Asst. Prof. BS 1935 USU. Graduate work USU and U of Idaho.

**DAVIS, DONALD W.** (1944) Asst. Prof. of Entomology. BS 1941 and PhD 1950 U of California. Articles in "Journal of Economic Entomology," "Pan Pacific Entomologist," "Utah Farm and Home Science."

**DAVIS, LYNN H.** (1952) Asst. Prof. of Agricultural Economics. BS 1949 and MS 1953 USU. Author of several Utah Agricultural Exp. Station Bulletins; articles in "Farm and Home Science."

**DEHART, WILLIAM A.** (1951) Asst. Prof. of Sociology. BS 1937 BYU, MA 1941 U of Minnesota, PhD 1950 U of Wisconsin. Author of "Agricultural Deferment," government monograph, two bulletins.

**DEWEY, WADE G.** (1956) Asst. Prof. of Agronomy. BS 1953 USU, PhD 1956 Cornell U. Listed in "American Men in Science" and "Who's Who in American Education." Articles in "Plant Disease Reporter," "Farm and Home Science."

**DITTMER, A. L.** (1956) Asso. Prof. of Music in Dept. of Fine Arts. AB 1936 U of U, MA 1938 Columbia U, PhD 1950 U of Rochester. Listed in "American Educators."

**DIX, D. C.** (1956) University News Editor, Information Services. Formerly Staff Writer for the "Salt Lake Tribune."

**DONOVAN, ANNETTE BICKMORE** (1957) Inst. in Business Administration and Secretarial Science. BS 1956 USU.

**DOTY, INA** (1936) Asso. Prof. of Business Administration and Secretarial Science. BS 1934 USU, MS 1941 Louisiana State U.

**DOWNES, LOIS** (1949) Asso. Prof. of Physical Education. BS 1945 and MS 1949 USU. Doctoral work at U of U.

**DRAKE, ELDON M.** (1951) Asso. Prof. of Education. BS 1943, USU, MS 1949 and PhD 1951 Iowa State C. Articles in "Farm Journal," "Better Farming Methods," "Agricultural Leaders Digest," "Country Gentleman," "Western Livestock Journal" and "American Farm Youth."

**DRAPER, C. I.** (1945) Prof. and Head, Dept. of Poultry Husbandry. BS 1939 USU, PhD 1943 Iowa State C. Listed in "American Men of Science;" Secretary, Utah State Poultry Council; Secretary, Utah Hatchers and Breeders Assn.; Secretary, Poultry Advisory Committee. Articles in "Poultry Science," "Turkey World," "Farm and Home Science," Bulletins and Circulars USU Experiment Station.

**DURHAM, MORRIS C.** (1956) Asst. Prof. of Military Science. BS CE 1950 Texas A & M. Author of research and development articles published by Armed Forces Technical Information Service.

**EAMES, RUBY** (1954) Asst. Prof. of Family Living and Child Development. BS 1941 USU, MS 1955 Iowa State C.

**EDWARDS, MAXWELL D.** (1949) Asso. Prof. of English. BA 1919 Simpson C., MA 1926 U of Illinois. Doctoral work U of Illinois, Northwestern U. Author of "Types and Times in English Literature," and "The Tudors and The Church, 1509-1553," USU Monograph Series, 1957.

**ELICH, JOE** (1946) Asso. Prof. of Mathematics. BS 1940 USU, MA 1942 U of California. Doctoral work UCLA. Listed in "American Men in Science."

**ELLER, JESSIE M.** (1954) County Home Agent. Ext. Asst. Prof.

**ELLSWORTH, S. GEORGE** (1951) Asso. Prof. of History. BS 1941 USU, MA 1947 and PhD 1951 U of California. Author of articles in "Utah Historical Quarterly," and of chapters in the "History of a Valley."

**EMBRY, BERTIS L.** (1946) Prof. of Electrical Engineering. Asso. of Science 1934 Weber C., BS 1941 USU, Navy Pre-Radar Course 1943-44 Princeton U, Navy Radar Course 1944 Mass. Institute of Technology, MS 1949 USU, EE 1954 Stanford U. Listed in "Who's Who in the West." Jr. Engineer with Rural Electrification Adm. 1941-42; Electronics Technician, Radiation Lab., U of California 1942-43; Commanding officer U.S. Naval Reserve Electronics unit.

**ERICKSON, SYLVAN** (1928) Controller. BS 1928 USU. USU Accountant; 1928-45 Asst. Secretary and Treasurer and Asst. Secretary of the Board of Trustees 1945-53 USU; Phi Kappa Phi Fraternity.



**ESPLIN, GRANT** (1946) County Agricultural Agent; Ext. Asst. Prof. BS 1943 USU.

**ESPLIN, JAMES LYNN** (1958) Asst. County Agent; Ext. Asst. Prof. BS 1954 USU.

**EYRE, H. DEAN** (1947) Purchasing Agent. BS 1943 and MS 1957 USU. Chairman, Rocky Mountain Group, National Assn. of Educational Buyers 1954-55; Member Board of Directors, Purchasing Agents Assn. of Utah, 1956.

**FARNSWORTH, WILLIAM F.** (1954) County Agricultural Agent; Ext. Asst. Prof. BA 1952 BYU, MS 1964 USU.

**FAUNCE, EVERETTE GEORGE** (1950) Head Football Coach; Asso. Prof.

**FINCH, RAY H.** (1955) County Agricultural Agent; Ext. Asst. Prof. BS 1938 USU, Graduate work USU and BYU.

**FLOYD, J. WHITNEY** (1935) Prof. and Head, Dept. of Forest Management; BS 1936 USU, MSF 1942 U of California. Graduate work at U of Michigan. Listed in "Who's Who in America;" "American Men of Science," and "Who's Who in the West;" articles in "Journal of Forestry;" "Fire Control Notes."

**FOGELBERG, THELMA** (1920) Asso. Prof. of Languages. BS 1929 USU, MA 1933 U of So. California, PhD 1939 L'Universite' de Paris, France. Graduate work La Escuela de Verano - La Universidalde, Mexico; special studies in Spanish in Guatemala City.

**FRANCE, EDWARD L.** (1940) Asst. Prof. of Technical Educational. DS 1941 USU. Graduate work USU.

**FRANDSEN, ARDEN N.** (1936) Prof. and Head, Dept. of Psychology. BS 1927 and MS 1929 U of U; PhD 1932 U of Minnesota. Fellow of The American Psychological Assn. and Diplomate (clinical) of the American Board of Examiners in Professional Psychology; Listed in "American Men of Science," "Leaders in Education," "Directory of Diplomates," "Directory of American Psychological Assn." Author of text "How Children Learn," "An Educational Psychology." Articles in "Journal of Educational Psychology," "Journal of Applied Psychology," "School and Society," "Mental Health," "Journal of Educational Research," "Journal of Consulting Psychology," and other Journals.

**FREDRICKSON, CARMEN** (1945) Asso. Prof. of Sociology. BS 1922 and MS 1935 USU. Social Work Certificate 1938 Doctoral work U of Chicago, Columbia U, U of Cali-

fornia, Cornell U. Listed in "Who's Who in the West," "Directory of American Scholars;" co-author of several USU Experiment Station Bulletins.

**FRIETZSCHE, ARTHUR H.** (1956) Asst. Prof. of English. BA 1944, MA 1945, PhD 1949 U of California.

**FRICHKNECHT, CARL** (1930) Director of Cooperative Extension Service; Prof. of Agriculture. BS and MS 1924 USU, PhD 1945 U of Maryland.

**FULLER, PAULINE** (1951) Asst. Prof. of Physical Education. BS 1939 and MS 1953 USU.

**FUNK, C. DENNIS** (1953) County Agricultural Agent; Ext. Asst. Prof. BS 1953 USU.

**GALLOWAY, LEORA S.** (1955) Research Associate in Foods and Nutrition. BS 1940 and MS 1944 USU. Articles in "Farm and Home Science," "Clinical Chemistry," "Journal American Dietetic Association," "Food Technology," "Food Research," "Journal of Dental Research," "Journal of Animal Science."

**GALOS, ANDREW J.** (1956) Asso. Prof. of Music in Dept. of Fine Arts. BS 1942 and MS 1952 Juilliard School of Music, MA 1955 and EdD 1957 Columbia U. Listed in "American String Teachers," "American Federation of Musicians."

**GARDNER, DALE L.** (1955) Adm. Asst. in Athletics and Instr. in Physical Education. BS 1953 USU.

**GARDNER, ELTON J.** (1949) Prof. of Zoology. BS 1934 and MS 1935 USU, PhD 1939 U of California. Postdoctoral work U of Calif. Listed in "American Men of Science," "Leaders in Education," "Leaders in American Science." Author of Genetics Laboratory Exercises; articles in "Journal of Heredity," "Genetics," "American Journal of Agronomy," "American Journal of Human Genetics," "Cancer," "Cancer Research."

**GARDNER, RHEA H.** (1939) Asso. Prof. of Housing and Home Management; Extension Specialist. BS 1938 USU, MA 1947 Cornell U. Study Tour of Europe 1955; author of extension bulletins on management of time, energy, and money, planning, decorating and 4-H club projects; author of home management lessons in the "Relief Society Magazine" for eight years.

**GARDNER, V. D.** (1927) Prof. of Business Administration. BS 1922 USU, MBA 1927 Harvard U. Co-author of "Everyday Economics."



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**GERBER, ROBERT K.** (1943) Asst. Prof. of Horticulture. BS 1932 and MS 1935 USU. Doctoral work Ohio State U. Listed in "American Men of Science;" articles in "Farm and Home Science;" inventor of insufflation device to be used while irradiating foods under water.

**GILMORE, FLORENCE** (1946) Asso. Prof. and Head, Dept. of Clothing, Textiles and Related Arts. BS 1923 Kansas State C., MS 1943 U of Minnesota. Listed in "Who's Who in American Education."

**GOODWIN, DUWAYNE L.** (1955) Asst. Prof. of Range Management. BS 1942 U of Idaho, MS 1946 U of Wisconsin, PhD 1955 Washington State C. Listed in "American Men of Science;" author of bulletins and of article in "Western Farmer."

**GREENWOOD, DELBERT A.** (1946) Prof. of Biochemistry and Pharmacology. BS 1926 and MS 1930 BYU, PhD 1946 U of Chicago. Listed in "American Men of Science," "Leaders in Education," and "Who's Who in America;" co-editor of "Methods of Vitamin Assay, 1947;" Chairman, Pesticide division of American Chemical Society.

**GRIMSHAW, PAUL R.** (1952) County Agricultural Agent; Ext. Asst. Prof. BS 1948 USU. Article in "Extension Service Review;" working on Farm Unit Approach Pilot Study.

**GROUTAGE, HARRISON T.** (1935) Asst. Prof. of Visual Arts in Dept. of Fine Arts. BA 1954 BYU, MFA 1955 U of U. Graduate work U of U.

**GUNNELL, MERRILL H.** (1947) Asso. Prof. of Zoology. BS 1930 and MS 1948 USU. Doctoral work at C. of Pacific, U of Wyoming, and Oregon State C.

**GUSEMAN, CARL A.** (1956) M/Sgt. USAF, First Sgt. AFROTC Det.

**GUYMAN, E. LEE** (1931) County Agricultural Agent; Ext. Asso. Prof. BS USU, MS Iowa State C. Doctoral work U of Maryland.

**HAILES, CHARLES W.** (1949) Asst. Prof. of Industrial and Technical Education. BS 1948 USU, MS 1953 U of Missouri.

**HALE, BLAIR** (1957) Lt. Colonel, USAF; Prof. of Air Science. BS 1941 U of Wyoming, MS 1956 U of Colorado.

**HALL, JAY M.** (1956) County Agricultural Agent; Ext. Asst. Prof. BS 1947 USU. Served an Iran agricultural mission.

**HAMMOND, DATUS M.** (1936) Prof. and Head, Dept. of Zoology, Entomology and Physiology. BS 1932 USU, MA 1934 and PhD 1936 U of California. Postdoctoral work at U of Munich. Listed in "American Men of Science," "Who's Who in America," "Who Knows and What;" articles in "Journal of Parasitology;" "American Journal of Veterinary Medical Assn.;" Berliner Und Mun chener Tierarztliche Wochenschrift.

**HAMMOND, ROBERT G.** (1956) Asst. Prof. of Mathematics. BS 1948 and MS 1952 USU.

**HAMSON, ALVIN R.** (1955) Asso. Prof. of Horticulture. BS 1948 USU, PhD 1952 Cornell U. Listed in "American Men in Science" and "National Science Foundation Register;" articles in "Food Research," "American Vegetable Grower."

**HANSEN, ARLEN L.** (1957) Instr. in Photography. BS 1952 USU. Graduate work at USU.

**HANSEN, BASIL C.** (1954) Asso. Prof. of Education. BA and MA 1933 BYU, EdD Stanford U. Graduate study at U of Idaho, U of U and Columbia U. Author of articles in national educational journals: "N.E.A. Journal Educational Administration and Supervision," "School and Society," "Nation's Schools," "School Executive." Division Chairman of Social Sciences at Weber College 1947-54.

**HANSEN, BESSIE M.** (1943) County Home Agent; Ext. Asst. Prof. BS 1929 USU.

**HANSEN, BLAIR** (1950) Asst. Prof. of English. BS 1950 and MS 1951 USU. Graduate work at U of Oregon.

**HANSEN, BURRELL F.** (1948) Asso. Prof. of Speech. BS 1940 USU, MS 1942 Purdue U, PhD 1953 U of Minnesota. Attended Stanford Television Institute. Listed in "Directory of American Scholars," "Who's Who in Education," and "LDS Educators;" articles in "Journal of the AERT."

**HANSEN, VAUGHN E.** (1949) Prof. of Civil and Irrigation Engineering; Director of Engineering Experiment Station. BS 1943 and MS 1947 USU, PhD 1949 State U of Iowa. Articles in "Journal of the American Society of Agricultural Engineers," "Journal of Soil and Water Conservation," "Soil Science," "Farm and Home Science," "Utah Farmer," "Salt Lake Tribune," USU Experiment Station bulletin and Extension circular.

**HARDER, VIRGINIA H.** (1956) Asst. Prof. and Head, Dept. of Home Economics Education. BS 1934 BYU, MS 1956 Iowa State C.

**HARDY, CLYDE T.** (1950) Asso. Prof. of Geology. BA 1943, MS 1948, and PhD 1949 Ohio State U. Listed in "American Men of Science;" articles in "Bulletin of Geological Society of America," "Bulletin of American Assn. of Petroleum Geologists," "Journal of Sedimentary Petrology," bulletins of Utah Geological and Mineralogical Survey, "Guidebook of Rocky Mountain Section of Geological Society of America, Guidebook of Utah Geological Society."

**HARMON, M. JUDD** (1951) Asso. Prof. of Political Science and History. BS 1948 USU, MS 1950 and PhD 1953 U of Wisconsin. Author of "The New Deal; A Revolution Consummated;" articles in "Western Political Quarterly."

**HAROLDSEN, EDWIN O.** (1956) Agricultural Information Specialist; Asso. Prof. BS 1943 and MS 1956 U of U. Bureau Manager, United Press Assns., 1946-48; reporter and farm editor, Deseret News & Telegram, 1948-55; member Sigma Delta Chi professional journalism fraternity, American Assn. of Agricultural College Editors.

**HARRIS, LORIN E.** (1945) Prof. of Animal Husbandry. BS 1937 USU, MS 1938 and PhD 1940 U of Illinois. Fulbright 1956 Australia Commonwealth Scientific Industrial Research Organization. Listed in "American Men of Science," "Who's Who in the West." Articles in "Journal of Nutrition," "Journal of Animal Science," "Journal of Range Management," "Cornell Veterinarian," "Journal of Forestry," "National Research Council," "Journal of Agricultural and Food Chemistry."

**HARRISON, GLADYS L.** (1936) Editor of Agricultural Publications; Asso. Prof. AB 1922 BYU, Certificate in Librarianship 1936 U of California. Graduate work USU, BYU Iowa State C.

**HASLEM, DEAN W.** (1950) Manager, USU Bookstore, BS 1949 BYU, MS 1957 USU.

**HASSELL, ROBERT L.** (1947) County Agricultural Agent; Ext. Asst. Prof. BS 1942 BYU. MS 1957 Cornell U. Rancher until 1944; Farm Planner for SCS 1944-47; County Agricultural Agent since 1947.

**HATCH, LAPRELE S.** (1944) Instr. in Library Science. Cataloging Librarian BYU 1911. Normal Degree in Elementary Education. Eligible for Life Teaching certificate in 1914. Graduate study USU.

**HATCH, TERRANCE E.** (1954) Asst. Prof. of Education. BS and MS 1943 USU, EdD 1954 U of California.

**HAWS, B. AUSTIN** (1957) Asso. Prof. of Entomology. BS 1948, MS 1949 USU, PhD 1955 Iowa State C. Listed in "American Men in Science;" articles in "Journal of Economic Entomology;" Articles in U of Minnesota Experiment Station and Extension publications.

**HAYES, MARY LOIS REICHERT** (1952) County Home Agent; Ext. Asst. Prof. BS 1952 U of U.

**HAYWARD, IRA N.** (1937) Prof. of English. BS 1924 USU, PhM 1937 U of Wisconsin; Reader at Henry E. Huntington Library; Doctoral work U of So. California; Listed in "Directory of American Scholars;" articles and reviews in "Poet Lore," Oregon Historical Quarterly," "Arizona Quarterly," "Western Humanities Review"; Member Modern Language Assn., National Council of Teachers of English, American Assn. for the Advancement of Science; Honorary Fellow, Utah Academy of Sciences, Arts, and Letters.

**HENDERSON, GEORGE** (1944) Prof. of Animal Husbandry; Ext. Spec.; BS 1929 and MS 1930 USU.

**HENDRICKS, KING** (1935) Prof. and Head, Department of English and Journalism, MA 1926 and PhD 1941 Stanford U. Graduate work at U of Berlin. Listed in "Who's Who in America" and "Directory of American Scholars;" co-author of "Glimpses of America," and "Yankee Stories" with W. K. Sundermeyer, published in Germany, and "Technical Writing" with L. A. Stoddart.

**HEYBORNE, ROBERT L.** (1957) Instr. in Electrical Engineering. BS 1949 USU; Graduate work USU. Former chairman, USU Chapter Institute of Radio Engineers; immediate past Lieutenant-Governor Utah-Idaho District Kiwanis.

**HILL, LEON M.** (1957) Instr. in Industrial and Technical Education, BS 1952 USU.

**HIMES, ELLVERT H.** (1954) Director, Student Services and Activities; Prof. of Education; AA 1929 Kansas City Jr. C., BS 1931 U of U, MA 1937 U of Kansas, PhD 1950 U of U. Listed in "Who's Who in American Education" and "Who's Who in The West;" co-author of "Salt Lake City—Your Community;" articles in "Junior College Journal," "Utah Education Review."

**HOLCOMB, HARVEY J.** (1955) M/Sgt. Asst. Instr. Department of Military Science.

**HOLMAN, VALERA G.** (1951) Head Teacher, Cooperative Nursery BS 1933 USU. Graduate work USU.

**HOLMGREN, ARTHUR H.** (1943) Asso. Prof. of Botany and Plant Pathology BA 1936 U of U; MS 1942 USU. Doctoral work at U of California. Listed in "A.A.A.S." and "American Society of Plant Taxonomists;" author of "Handbook of the Vascular Plants of Northeastern Nevada," "Handbook of the Vascular Plants of the Northern Wasatch;" articles in "Genetics," "Madrono," Leaflets of Western Botany.

**HUBER, THELMA** (1931) Prof., Supervisor Home Economics Programs Extension Service. BS 1925 and MS 1931 USU. Doctoral work at Columbia U and Cornell U.

**HUGHES, JOHN KEITH** (1952) County Agricultural Agent. Ext. Asst. Prof. BS 1950 USU.

**HUNSAKER, H. B.** (1935) Prof. and Head, Dept. of Health, Physical Education and Recreation; Director of Athletics. BS 1930 USU, MS 1932 U of Oregon. Doctoral work U of California, U of Washington, U of U. Listed in "Who's Who In Western America;" member of National Committees on P.E., 1954, Health, 1955, and of Recreation, 1956. Merit awards for outstanding contributions in Recreation in Utah 1953; and in P. E. in the Southwest District of AAHPER, 1956.

**HUNSAKER, LLOYD R.** (1936) Asso. Prof. Supervisor of Agricultural Programs, Extension Service. BS 1935 USU, PhD 1957 U of Minnesota; Author or Co-author of several Experiment Station and Extension Service Bulletins.

**HUNSAKER, NEVILLE C.** (1941) Prof. and Head, Dept. of Mathematics; BA 1930 U of U, MA 1932 U of California, PhD 1948 Rice Institute. Listed in "American Men of Science." Phi Kappa Phi, Sigma Xi, Pi Mu Epsilon.

**HURST, CLYDE** (1940) Instr. in Industrial and Technical Education. General Motors training in hydraulics, controlled coupling, automatic transmissions.

**HURST, REX L.** (1952) Asso. Prof. and Head, Department of Applied Statistics; BS 1948 and MS 1950 USU, PhD 1952 Cornell U. Articles in USU Experiment Station Bulletins, "Journal of American Society of Sugar Beet Technologists.

**ISRAELSEN, VERNON L.** (1947) Prof. of Economics. BS 1929 USU, MA 1937 BYU, PhD 1942 U of Wisconsin. Economist for Board of Investigation and Research in Wash. D. C.; economist, Public Housing Adm., Cleveland, Ohio and in Puerto Rico. Special lecturer in Economics at Western Reserve U.

Articles in "Farm and Home Science," co-author of "Laws Relating to Interstate Movement of Agr. Products," U of Arizona.

**JACOBSEN, GENE S.** (1957) Principal, Edith Bowen Laboratory School; Asst. Prof. of Education. BS 1949 and MS 1954 USU, EdD 1957 U of California. Article in "Review of Educational Research."

**JARRETT, VON H.** (1952) Asst. Prof. of Agricultural Engineering, BS 1948 and MS 1954 USU.

**JENSEN, CLAYNE R.** (1956) Inst. in Physical Education and Recreation; Extension Recreation Specialist. BS 1952 and MS 1956 U of U Doctoral work, U of U. Articles in "Recreation Magazine" and "Athletic Journal."

**JENSEN, JAY O.** (1942) Asst. Prof. of Physics. BS 1940 USU. Graduate work USU.

**JENSEN, LOUIS A.** (1946) Asst. Prof. of Agronomy; Extension Specialist. BS 1939 USU. Graduate work USU, Colorado State C., Teaching assistant, farm supervisor and County Agr. Agent. Author of Extension bulletins and "Farm and Home Science" articles.

**JENSEN, NAOMI** (1944) County Home Agent; Ext. Asst. Prof. BS 1938 USU. Graduate work USU.

**JOHNSON, HAZEL M.** (1957) Women's Activities Counselor; Asst. Prof. of Psychology. BA 1940 Whitworth C, MA 1952 Stanford U. Doctoral work Stanford U. Listed in Directories of the American Personnel and Guidance Assn. and the National Assn. of Women Deans and Counselors.

**JOHNSON, THETA** (1943) Asso. Prof. of Clothing, Textiles and Related Arts; Extension Specialist. BS 1938 USU, MA 1953 Columbia U. Author of 18 Extension bulletins and two articles in "Utah Farmer."

**JONES, LEWIS W.** (1938) Asso. Prof. of Bacteriology. BS 1936 and MS 1947 USU, PhD 1953 Stanford U. Listed in "American Men of Science," "Who's Who in American Education" "Who's Who in the West." Articles in "Soil Science," "Journal of Bacteriology,"

**JONES, WILLIAM L.** (1947) Asso. Prof. of Electrical Engineering. BS 1944 U of Illinois, MS 1949 USU, EE 1956 Stanford U. Article in "Electronics." Navy engineering, communication and radar schools at Columbia U, Harvard U and Bowdin C. Chief engineer at Cache Valley Broadcasting Co.; Electronics Engineer at Hill Air Force Base; Senior Project Engineer, Sperry, Utah.

**KEARSLEY, AMY R.** (1940) Asso. State 4-H Club Leader; Asso. Prof. in Extension Service. BS 1933 USU, MA 1947 Columbia U. Doctoral work U of Maryland. Author of "Utah 4-H Club Leaders Handbook." County Home Agent.

**KEETCH, RUSSELL R.** (1929) Ext. Serv. Dist. Supervisor; Asso. Prof. of Animal Husbandry. MA 1951 Columbia State U. Wasatch County Agricultural Agent 1929 — 1936; Uintah County Agent, 1936 - 1945; Sanpete County Agent 1945-1950.

**KELKER, GEORGE HILLS** (1937) Prof. of Wildlife Management. BA 1928 Hiram C., BSF 1931, MSF 1932, SCD 1946 U of Michigan. Studied at U of British Columbia. Listed in AAAS Membership, "American Men of Science," "Who's Who in the West," "Who Knows and What," "Who's Who in American Education," "The Blue Book of World Notables," "The Roster of Scientific and Specialized Personnel." Author of "Research Methods for the Beginner;" Articles in "Journal of Wildlife Management," "Journal of Forestry."

**KEMP, ANTONE B.** (1941) Inst. in Welding in Dept. of Industrial and Technical Electronics. Welding Engineer student and employee at John Huntington Poly Tech 1936-37, Cleveland Ohio.

**KEPNER, HAROLD R.** (1930) Prof. of Civil Engineering. AB 1917 Ohio Wesleyan U, SB 1920 SM 1925 Mass. Institute of Technology. Listed in "Who's Who in Engineering," "Who's Who in America," "American Men of Science."

**KIEFER, FRED W., JR.** (1955) Asst. Prof. of Civil and Irrigation Engineering. BS 1950 USU, MS 1953 Colorado State U. Associate Member American Society of Civil Engineers; American Society for Engineering Education; Sigma Xi.

**KLAGES, KARL W.** (1957) Athletic News Editor and Inst. in Journalism. BA 1952 U of Idaho. Graduate work at Washington State C. Professional work in radio.

**KNOWLTON, GEORGE FRANKLIN** (1925) Prof. of Entomology; Extension Specialist. BA 1923 and MA 1925 USU, PhD 1932 Ohio State U. Postgraduate work U of Minnesota. Listed in "American Men of Science," "Who's Who in America," "Leaders in American Science," "Who's Who in American Education," "Fragments of Entomological History," "Nautralists Directory," "Who Knows and What," and "Who's Who in the West." Author of sections in two books and of more than 600 technical articles, bulletins, leaflets and

special reports — published by Agricultural Experiment Station, Extension Service and technical magazines.

**KRIEGER, CHESTER G.** (1955) Major, USAF; Asst. Prof. of Air Science. BS 1948 U of Denver.

**LAMBORN, ELLIS W.** (1954) Asso. Prof. of Agricultural Economics. BS 1943 USU, MS 1944 U of Ill., PhD 1947 Cornell U. Listed in "Who's Who in the West," author of four Experiment Station Bulletins, several articles in "Farm and Home Science," and numerous popular articles.

**LARSEN, PAUL B.** (1948) Asso. Prof. of Dairy Industry. BS 1938 USU, MS 1940 Michigan State U. Doctoral work Rutgers U. U of Maryland. Articles in "Journal of Dairy Science," "Farm and Home Science and "Utah Farmer."

**LARSON, G. OLOF** (1957) Asst. Prof. of Chemistry. BS 1948 and 1951 U of U. Doctoral work at Washington State C. nearly completed.

**LARSON, JESSIE** (1941) Asso. Prof. of Visual Arts in Dept. of Fine Arts. BS 1933 USU, MFA 1948, U of Washington, Seattle; Studied at Art Students' League of New York, U of New York, Colorado Springs Fine Arts Center, and USU. Articles in "Eleusis of Chi Omega" Painting awards: first place Idaho State Fair 1940, first place Utah State Institute of Fine Arts 1946, first place Utah State Fair 1949.

**LAVORGNA, PHILIP A.** (1955) T/Sgt. USAF Asst. Supply Sgt. AFROTC Det.

**LEE, GARTH L.** (1954) Asso. Prof. of Chemistry. BA 1944 and MA 1947 U of U, PhD 1949 U of Toronto. Listed in "American Men of Science," Author of "Laboratory Manual for General Chemistry," "General Chemistry, Parts I and II," articles in "Journal of Chemical Physics," "Journal of Analytical Chemistry," "Canadian Journal of Research" and "Optical Society of America."

**LEE IVAN E.** (1952) Asst. Prof. of Industrial and Technical Education. BS 1950 and MS 1955 USU. Listed in "LDS Educators Directory."

**LEMON, BESSIE K.** (1954) County Home Agent. Ext. Asst. Prof. BA 1933 U of U.

**LEWIS, DOROTHY B.** (1953) Asst. Prof. of Family Living and Child Development. BS 1951 U of New Mexico, MS 1953, Iowa State U. Certificate of Library Science, 1931 Western Reserve U.

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**LEWIS, EVELYN HODGES** (1938) Asst. Prof. of Sociology. BS 1929 USU, MA 1938 U of Chicago. Doctoral work U of California, U of Chicago. Listed in "Directory of American Scholars," "Who's Who in American Education."

**LEWIS, WILLIAM PAUL** (1957) Asst. Prof. of Education. AB 1946 Ohio State U. BS 1946, MA 1950, EdD 1954 George Peabody College for Teachers.

**LINDSAY, HAROLD G.** (1946) Asst. County Agricultural Agent, Ext. Instr.

**LINDSTROM, GAELL** (1957) Asst. Prof. of Visual Arts in Dept. of Fine Arts. BS 1952 U of U. Doctoral work California C. of Arts and crafts. Member American Watercolor Society, Calif. Watercolor Society.

**LINFORD, GENE H.** (1948) Asst. Prof. of Zoology. BS 1933 USU, MS 1935 U of U. Doctoral work U of California. Article in Proceedings of the Utah Academy of Sciences.

**LOGAN, IDA MARIE** (1947) Reference Librarian, Instructor. MS 1956 USU. Listed in "Who's Who in Library Service." Article "A bibliography of theses and dissertations concerning Utah or the Mormons written outside the State of Utah," in "Utah Historical Quarterly."

**LOVELESS, AUSTIN G.** (1952) Asso. Prof. of Engineering Drawing, Asst. to the Dean of Engineering. BS 1947 USU, MS 1952 Oregon State C.

**LU, KUO HWA** (1956) Asst. Prof. of Applied Statistics; BS 1945 Central U of China, MS 1948 and PhD 1951 U of Minn. Postdoctorate research fellow at U of Minn.

**LUNDSTROM, HELEN** (1953) Instr. in Business Administration and Secretarial Science. BS 1942 USU, MBA 1957 U of Denver. Listed in "Who's Who in American Women."

**MADISON, JAMES B.** (1956) Asst. Instr., SFC Department of Military Science.

**MADSEN, MILTON A.** (1935) Asso. Prof. of Animal Husbandry. BS 1934 and MS 1939 USU. Two years of Doctoral work U of Wisconsin. Articles in "Farm and Home Science."

**MARSTON, GLENN F.** (1954) Asst. Prof. of Economics. BS 1951 and MS 1953 U of U.

**MARTIN, MAUD** (1940) County Home Agent, Ext. Asso. Prof. BS 1931 U of U. Graduate work Oregon State C.

**MATTHEWS, DOYLE J.** (1951) Asst. Prof. of Animal Husbandry. BS 1950 and MS 1951 USU. Doctoral work Calif. Polytechnic C., Kansas State C. Author of articles in "Farm and Home Science," co-author of Utah Agricultural Experiment Station Bulletin.

**MAUGHAN, J. HOWARD.** (1955) Asst. to Dean of Agriculture. BS 1916 and MS 1924 USU. Doctoral work at U of Wisconsin. Listed in "American Men of Science;" co-author USU bulletins Experiment Station; Director, CSU 1922-29; Senior Irrigation Economist, USDA, 1934-51.

**MAUGHAN, RALPH B.** (1951) Asst. Coach; Asst. Prof. of Physical Education. BS 1947 and MS 1948 USU. National Collegiate Athletic Assn. Rules Committee 1956-57; Detroit Lions Professional Football 1949.

**MAUGHAN, WESLEY T.** (1955) County Agricultural Agent, Ext. Asst. Prof. BA 1951 USU.

**MAYFIELD, ROSS F., JR.** (1956) Asst. Prof. of Military Science. BS in Military Science Engineering USMA.

**McALLISTER, DEVERE B.** (1950) Asso. Prof. of Agronomy. BS 1939 and MS 1948 USU, PhD 1950 Iowa State C. Listed in "American Men of Science;" author of articles in "Farm and Home Science;" co-author of alfalfa seed bulletin; member American Society of Agronomy and American Assn. for the Advancement of Science.

**McBRIDE, C. D.** (1947) Chairman Management Institute; Assistant Prof. of Business Administration. BS 1933 and MS 1940 USU.

**McCLELLAN, LINCOLN H.** (1956) Asst. Prof. of Health, Physical Education and Recreation. BS 1937 USU, MS 1941 U of Oregon. Doctoral work at USU.

**MENDINI, ARTHUR H.** (1955) Instr. in Physical Education. BS 1952 USU, Graduate work at USU.

**MERKLEY, CHARLES N.** (1947) Asso. Prof. of Industrial and Technical Education. BS 1936 USU, MS 1958 North Texas State C.

**MERKLEY, MARGARET B.** (1951) Instr. in Home Economics Education and Foods and Nutrition. BS 1951 and MS 1952 USU. Doctoral work Texas Women's U. Articles in "Farm and Home Science" and "Journal of Animal Science."

**MERRELL, MABEL** (1956) County Home Agent; Ext. Instr. BS (Ed.) 1948 U of Idaho, BS 1956 BYU Graduate work U of Idaho and USU.



- MERRILL, MILTON R.** (1926) Dean, College of Business and Social Sciences; Prof. and Head of Dept. of History and Political Science. BA 1925 USU, MA 1932 and PhD 1951 Columbia U. Listed in "Who's Who in America;" articles in "Western Political Science Review," "Western Humanities Review," publications of Governmental Affairs Institute, Presidential Nominating Politics 1952, University Monograph Series.
- MERRILL, SAMUEL W.** (1956) Instr. in Industrial and Technical Education. BS 1942 USU, Graduate work USU.
- MEYER, GEORGE A.** (1935) Prof. of Modern Languages; Foreign Student Adviser. BA 1916 Wittenberg C., BA 1917 Yale C. STB 1925 General Theological Seminary, PhD 1934 Yale U. Author of manual, "Phonetic and Rhythm Patterns of American English."
- MICHAELSEN, LEON C.** (1950) Asso. Prof. of Agricultural Economics; Extension Farm Management Specialist. BS 1937 USU, MS 1938 Montana State C. co-author of "Let's Look Ahead," a weekly Extension Service Publication and other articles and circulars.
- MILLER, ELNA** (1928) Prof. of Foods and Nutrition; Extension Specialist. BS 1921 USU, MS 1926 Columbia U., Doctoral work. Author of numerous Extension bulletins; articles in "Utah Farmer" and "Improvement Era" Membership in Phi U.
- MILLER, GENE W.** (1957) Asst. Prof. of Botany and Plant Pathology. BS 1950 and MS 1954 USU, PhD 1957 North Carolina State C. Articles in "Plant Physiology," "Nature," "Physiologia Plantarum."
- MILLER, RAYMOND W.** (1956) Asst. Prof. of Agronomy. BS 1952 and MS 1953 U of Arizona, PhD 1956 State C. of Washington. Listed in "Who's Who in American Education" and "Soil Science Society of American Proceedings."
- MILLIGAN, CLEVE H.** (1943) Prof. and Head, Dept. of Civil and Irrigation Engineering. BS 1932 USU, MS 1933 U of California. Ten years professional engineering, U.S. Forest Service and U.S. Army Engineers; listed in "American Men of Science" and "Who's Who in Engineering;" member of Phi Kappa Phi, Sigma Tau, Sigma Xi, Am. Soc. Civil Engrs. Am. Soc. Agr. Engrs. and Western Snow Conference. Author of Experiment Station Bulletins and articles in "Farm and Home Science."
- MINER, MERTHYR L.** (1943) Prof. and Head, Dept. of Veterinary Science. BS 1937 USU, DVM 1941 Iowa State C. Postdoctoral work U of Minn. Articles in "American Journal of Veterinary Research," "Journal of Nutrition," "Poultry Science," "Journal of Dairy Science," "Farm and Home Science."
- MOORE, J. REED** (1945) County Agricultural Agent; Ext. Asst. Prof. Associate Degree 1929 Ricks C., BS 1936 USU, Graduate work USU. Colorado State U. Taught agriculture at Beaver High 1936-45; taught elementary grades in Idaho 1929-30 and 1930-31.
- MOORE, RAYMOND R.** (1946) Asso. Prof. of Forestry. BS 1936 Pennsylvania State U. MF 1946 Yale U. Doctoral work U of Calif. Article in "Farm and Home Science;" Extension Service Bulletins.
- MORGAN, FLOYD T.** (1934) Asso. Prof. BS 1934 USU, MA 1939 State U of Iowa. Doctoral work at Stanford U and State U of Iowa. Member American Educational Theatre Assn.
- MORRIS, A. J.** (1931) Prof. and Head, Dept of Dairy Industry. BS 1923 and MS 1930 USU. Doctoral work at U of Wisconsin. Listed in "Who's Who in America;" "articles in "Farm and Home Science," "Milk Plant Monthly," "Utah Farmer," "Canadian Dairy Journal."
- MORRIS, LAVAL S.** (1939) Prof. and Head, Dept. of Environmental Planning and Landscape Design. BS 1923 USU, MS 1925 Michigan State U, MLA 1933 Harvard U. Listed in "Who's Who in America" and "Directory of American Society of Landscape Architects;" articles in "Landscape Architecture" and "Better Homes and Gardens."
- MORRISON, EARNEST M.** (1945) Asso. Prof. of Agricultural Economics. BS 1937 USU, MS 1939 U of California. Doctoral work U of Illinois and North Carolina State. Listed in "Directory of LDS Educators" and "Who's Who in the West;" author of 11 Utah Agricultural Experiment Station bulletins, and 12 "Farm and Home Science articles," and two record books.
- MORTENSEN, J. LYNN** (1950) Asst. Prof. of English. BS 1949 and MS 1950 USU. Graduate work U of U.
- MORTIMER, WILLIAM E.** (1943) Prof. and Head, Dept. of Industrial and Technical Education. BS 1923 BYU, MS 1942 Oregon State C., EdD 1956 U of Missouri. Listed in "Who's Who In the West," "Industrial Teacher Education Directory;" article in "School and Community."
- MURDOCK, ROBERT S.** (1953) County Agricultural Agent; Chairman, Roosevelt Extension Service Office; Ext. Assistant Prof. BS 1949, USU.

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**MURRAY, BEATRICE E.** (1954) Instr. in Elementary Education. BS 1954 USU.

**MURRAY, EVAN B.** (1934) Prof. and Head, Dept. of Economics; Acting Head, Dept. of Business Administration and Secretarial Science. BS 1927 and MS 1930 USU. Doctoral work U of So. California and U of Chicago. Author of "Economic Theory, Finance, Labor Economics;" articles in USU Monograph series.

**MYERS, CHESTER J.** (1926) Prof. and Head, Dept. of Speech. BS 1921 U of U, MA 1925 U of Iowa, PhD 1940 U of So. California. Article in "Journal of Expression."

**NELSON, DALE O.** (1947) Asso. Prof. of Physical Education. BS 1942 and MS 1948 USU, PhD 1957 U of So. California. Articles in "Research Quarterly," "Journal AAAPER," "Athletic Journal."

**NELSON, GEORGE** (1921) Wrestling Coach; Instr. in Physical Education. Special degree, LDS Church school.

**NELSON, JACK A.** (1955) Instr. in Physical Education; Asst. Football Coach. BA 1950 Gustavus Adolphus C. Graduate work U of Colorado and USU. Listed in "College Blue Book."

**NELSON, MARY** (1946) Asso. Prof. of Mathematics. BA 1933 USU, MS 1938 State U of Iowa. Listed in "American Men of Science."

**NELSON, RUTH** (1952) County Home Agent; Ext. Instr. BS 1953 USU.

**NESMITH, ROBERT E.** (1957) S/Sgt. USAF, Personnel NCO, AFROTC Det.

**NEUBERGER, L. MARK** (1932) Dean of Academic Administration; Prof. of Business Administration; University ROTC Coordinator. BS 1932 and MS 1934 USU. Doctoral work at U of Chicago, U of So. California and U of California. Graduate of Associate and Personnel Management courses of The Adjutant General's School 1947 and 1950. Listed in "Directory of American Scholars" and "Who's Who in the West;" articles in "The Balance Sheet," "Utah Educational Review," "Collegiate News and Views," "Phi Kappa Phi Journal."

**NEWMAN, PARLEY W.** (1954) Asst. Prof. of Speech; Director of Speech Clinic. BS 1950 and MS 1951 USU, PhD 1954 State U of Iowa. Granted Advanced Certification in Speech by the American Speech and Hearing Assn.; President, Utah Speech and Hearing Assn., 1956-58; articles in "Journal of Speech and Hearing Disorders," "Frontier."

**NIELSEN, H. M.** (1941) Asst. Prof. of Chemistry. BS 1933 and MS 1936 USU. Articles in "Journal American Vet Medical Assn.," "Poultry Science," "Analytical Chemistry," "Farm and Home Science."

**NIELSEN, MARION L.** (1936) Prof. and Head, Dept. of Languages. BS 1935 USU, MA 1936 and PhD 1946 Stanford U. American-Scandinavian Foundation Fellow, U of Copenhagen, Denmark, 1946-47; Ford Foundation Fellow, U of Innsbruck, U of Austria and U of Munich, Germany. Listed in "Directory of American Scholars;" articles in "Western Review," "Western Humanities Review;" "USU Monograph Series."

**NIELSEN, VENETA L.** (1946) Instr. in English. BS 1940 and MS 1950 USU.

**NIELSON, REX F.** (1949) Asst. Prof. of Agronomy. BS 1947 and MS 1949 USU. Listed in "American Men in Science;" articles in "Farm and Home Science;" author of two Experiment Station bulletins and one circular.

**NOBLE, LEE GRANDE** (1945) Director of Summer School and Off-Campus Education; Prof. of Education. BS 1924 BYU, MS 1939 and EdD 1944 U of So. California.

**NORTON, ROBERT A.** (1934) Asst. Prof. of Horticulture. BS 1950 and MS 1951 Rutgers U, PhD 1954 Michigan State U. Listed in "American Men in Science;" articles in "Farm and Home Science" and "Utah Farmer."

**NYMAN, EDITH** (1955) Asst. Prof. of Clothing, Textiles and Related Arts. BS 1943 and MS 1958 USU.

**NYMAN, ROSS A.** (1946) Instr. in Engineering Drawing. BS 1954 USU. Graduate work USU and Oregon State C.

**OGDEN, MARVEN J.** (1956) County Agricultural Agent; Ext. Instr. BS 1940 USU. Graduate work USU. County Supervisor, Farmers Home Administration 1942; Vocational Agricultural Instructor, Delta High School 1943-55; Recipient of Honorary State and American degrees for accomplishments as FFA Instr. Associate member, Alpha Tau Alpha.

**OGDEN, PHIL REED** (1956) Asst. Prof. of Range Management. BS 1952 and MS 1956 USU.

**OLSEN, ALICE** (1954) Instr. in Elementary Education. BS 1952 U of U.

**OLSEN, DONALD R.** (1955) Asst. Prof. of Geology. BS 1948 USU, MS 1951 U of U. Graduate work U of U. Listed in "AIME Directory."

**OLSEN, FLORIS S.** (1950) Asst. Prof. of Business Administration and Secretarial Science. BS 1944 U of U, MS 1952 USU. At CSU 1946-50.

**OLSEN, L. ELMER** (1955) Asst. Prof. of Chemistry. BS 1941 USU, MS 1947 U of U, PhD 1957 U of Illinois. Listed in "Directory of American Chemical Society; articles in "Journal of the American Chemical Society" and "Journal of Polymer Science."

**OLSON, CHARLES P.** (1952) Lecturer in Political Science. BS 1939 USU, JD 1946 George Washington U.

**OLSON, GERALD RAY** (1956) County Agricultural Agent; Ext. Instr. BS 1956 USU.

**PAHTZ, GEORGE** (1946) Instr. in Music in Dept. of Fine Arts.

**PALFREYMAN, BERNICE** (1944) County Home Agent; Ext. Asst. Prof. BS 1940 USU.

**PARRISH, JOSEPH** (1934) County Agricultural Agent; Ext. Asso. Prof. BS 1933 USU.

**PATRICK, JOHN M.** (1957) Asst. Prof. of English. AB 1942 and MA 1947 Southwestern U, PhD 1956 Georgetown U. Postdoctoral work U of Texas and Chinese Language School. Listed in "Directory of American Scholars;" articles in "Notes and Queries" (Oxford University); "Modern Language Notes" (The John Hopkins University); "The Marine Corps Gazette."

**PEARCE, JANICE** (1957) Instr. in Health, Physical Education, and Recreation. BS 1952 U of U, MS 1957 State C of Washington.

**PEDERSEN, IVAN** (1953) Instr. in Education, at Edith Bowen Laboratory School. BS 1950 and MS 1955 USU.

**PETERSON, DEAN F., JR.** (1946) Dean of College of Engineering and Technology; Prof. of Civil Engineering. BS 1934 USU, MCE 1935 and DCE 1939 Rensselaer Polytechnic Institute Listed in "American Men of Science" and "Who's Who in the West"; articles in "Journal of Engineering Education," "Farm and Home Science"; Monograph on Land Drainage, American Society of Agronomy; Agricultural Experiment Station Bulletins.

**PETERSON, EDWIN L.** (1937) Asso. Prof. of Social Science. BS 1937, MS 1941, and PhD 1957 USU. Graduate work U of California.

**PETERSON, HOWARD B.** (1940) Prof. and Head, Dept. of Agronomy. AB and MA 1935 BYU, PhD 1940 U of Nebraska. Listed in "American Men of Science" and "Who's Who in the West"; Co-author of text, "Irrigated

Soils." Articles in "USDA Yearbook," USDA circulars, Experiment Station bulletins and miscellaneous journals.

**PIPES, EDWIN C.** (1956) M/Sgt. Department of Military Science, Asst. Instr.

**POLLARD, LEONARD H.** (1939) Prof. and Head, Dept. of Horticulture. BS 1932 and MS 1934 USU, PhD 1939 U of California. Listed in "American Men of Science," "Who's Who in America," and "Who's Who in the West." Author of "Vegetable and Flower Seed Production"; articles in "Food Technology," "American Soc. Hort. Science," Experiment Station bulletins.

**PORTER, GORDON E.** (1947) Asst. Prof. of Languages. BS 1943 USU. Graduate work Stanford U and U of Washington. Member "American Assn. of Teachers of Spanish and Portuguese." In U.S. Foreign Service, Rio de Janeiro, Brazil 1945-47.

**POST, THOMAS R.** (1957) SFC, Asst. Instr. in Military Science.

**POULSON, JENNIEV J.** (1947) County Home Agent, Ext. Asso. Prof. BS 1933 BYU, MS 1954 Iowa State C. Graduate work Cornell U.

**PREATOR, FREDERICK** (1937) Prof. and Head, Dept. of Tool Engineer. BS 1935 USU, MS 1947 Wayne U. Listed in "Who's Who in West." Member of Phi Kappa Phi, Phi Beta Kappa, Sigma Tau, American Society Tool Engineers; Institution Production Engineers. Author of articles in technical journals.

**PUBOLS, BENJAMIN H., JR.** (1957) Asst. Prof. of Psychology. BA 1953 U of Virginia, MS 1955 and PhD 1957 U of Wisconsin. Listed in "Directory of the American Psychological Assn.;" articles in "Journal of Comparative and Physiological Psychology."

**PUGMIRE, DOROTHY JEAN** (1956) Asst. Prof. of Elementary Education. BS 1948 USU, MA 1951 U of Michigan. Member of UEA, NEA, ACEI.

**QUINNEY, DEAN N.** (1957) Asst. Prof. of Forest Management. BSF 1950 Pennsylvania State U, MS 1954 Syracuse U. Doctoral work Michigan State U. Five years research experience with Forest Service. Publications in forest resource studies.

**RANSON, VILATE** (1957) Instr. in Library Science. BS 1947 BYU, MSLS 1957 U of Denver.

**RASMUSSEN, HOWARD DALE** (1957) Instr. in Physical Education. BS 1949 and MS 1956 USU.

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**REESE, L. GRANT** (1955) Instr. in English. BS 1955 and MS 1956 USU.

**REYNOLDS, H. REUBEN** (1923) Prof. of Visual Arts in Dept. of Fine Arts. Graduate of Chicago Art Institute. Listed in "Who's Who in Art in America."

**RICE, MOYLE Q.** (1937) Prof. of English. BS 1936 USU, MA 1937 U of Nebraska, Doctoral work at U of Chicago, Harvard U.

**RICH, ELLIOT** (1956) Asso. Prof. of Civil Engineering. BS 1943 USU, MS 1951 U of U. Graduate work U of U.

**RICH, LYMAN H.** (1925) Prof. of Dairy Industry; Extension Specialist. BS 1925 USU, MS 1930 U of Minn. Wasatch County Extension Agent, 1925-29; Utah County Extension Agent 1930-36. Chairman ADSA DeLaval Award Committee 1954; Chairman ADSA Membership Committee 1955; Chairman ADSA Resolutions Committee 1956; candidate for President American Dairy Science Assn. 1957; author of Extension bulletins.

**RICH, WAYNE R.** (1955) Asst. Prof. of Mathematics. BS 1948 and MS 1949 USU.

**RICHARDS, LEWIS A.** (1957) Asst. Prof. of English. Professor's Diploma 1951 U of Athens, Greece, BA 1955 and MA 1956 U of So. California.

**RICHARDSON, STANLEY S.** (1950) Prof. and Head, Dept. of Agricultural Education. BS 1925 USU, MS 1938 U of Idaho. Listed in "Who's Who in Education" and "Leaders in Education."

**RICKENBACH, RODNEY G.** (1945) County Agricultural Agent, Ext. Asso. Prof. BS 1945 USU. Graduate work USU, Colorado State U.

**RICKERS, ALVIN E.** (1956) Captain USAF; Asst. Prof. of Air Science. BS 1949 U of U.

**RICKS, JOEL EDWARD** (1922) Prof. of History. AB 1912 U of U, AM 1920 and PhD 1930 U of Chicago. Postdoctoral work U of California. Listed in "Who's Who in America." Author of "Fifty Years of Utah State Agricultural College." Editor and contributor to "The History of a Valley: Cache Valley."

**RIETHMANN, OTTO** (1950) Instr. in Horticulture. Certificates for training in different specialized fields in Floriculture and Landscaping in Switzerland, France and Holland, 1928-29. Articles in Swiss horticulture magazines and "Farm and Home Science."

**ROBERTS, BEA** (1956) Instr. in Elementary Education. BS 1948 BYU. Graduate work U of U.

**ROBERTS, NORMAN KEITH** (1957) Asso. Prof. of Agricultural Economics. BS 1948 and MS 1949 Iowa State C. Doctoral work U of California, U of Kentucky.

**ROBINSON, MAX E.** (1949) Asst. Prof. of Range Management. BS 1940 USU, MS 1941 Oregon State C. Article in "Horse and Mule Assn. of America."

**ROBINSON, REX E.** (1946) Prof. of Speech. BS 1931 Oregon State C., MA 1933 State U of Iowa, PhD 1947 U of Wisconsin. Articles in "The Gavel."

**ROGER, LEE S.** (1950) Asst. County Agricultural Agent. Ext. Asst. Prof.; BS 1950 USU.

**ROSE, D. WAYNE** (1952) County Agricultural Agent; Ext. Asst. Prof. BS 1952 USU.

**ROSCELLEY, R. WELLING** (1947) Prof. and Head, Dept. of Sociology. BS 1932 and MS 1933 USU, PhD 1938 U of Wisconsin. Listed in "Who's Who in Western America." Author of "Sociology Under Analysis." Articles in "Western Farm Life," "Rural Sociology," "American Sociological Review," "Farm Science," Experiment station bulletins.

**ROWLAND, PRISCILLA** (1945) Asst. Prof. of Foods and Nutrition. BS 1923 USU, MS 1938 Oregon State C., Doctoral work U of U, Oregon State C., Texas State C. for Women. Articles in "Forecast in Home Economics," "Practical Home Economics," "The Candle of Phi Upsilon Omicron," publications of Oregon State System of Higher Education.

**SALUNKHE, DATTAJEEARAO K.** (1954) Asst. Prof. of Horticulture. BS 1949 Poona U (India), MS 1950 and PhD 1953 Michigan State U. Articles in "Journal of Agronomy," "Food Technology," "Food Research," "Agricultural Chemicals," "Nature" (England), "Indian Journal of Horticulture," "Michigan Quarterly Bulletin," "Utah Farm and Home Science," "Crops and Soils," "American Potato Journal."

**SHARP, HEBER C.** (1946) Asso. Prof. of Psychology. BS 1944, MS 1945, and PhD 1955 U of U. Listed in "Who's Who in American Education," "American Men of Science," "Directory of American Psychological Assn." Articles in "Journal of Exceptional Children," "Journal of Clinical Psychology," "Journal of Consulting Psychology."

**SHAW, EDITH SMITH** (1942) Asso. Prof. of Education. BS 1936 USU, MA 1954 Northwestern U.

**SHAW, RICHARD J.** (1950) Asst. Prof. of Botany. BS 1948 and MS 1950 USU. Doctoral work at Claremont Graduate School. Author of "Wildflowers of Yellowstone and Grand Teton National Parks." Articles in "Madrono" and "American Midland Naturalist."

**SHIPLEY, JOHN R.** (1956) Captain, USAF, Asst. Prof. of Air Science. BME and MM 1951 U of Tulsa.

**SHUPE, J. LEGRANDE** (1952) Asso. Prof. of Veterinary Science. BS 1948 USU, DVM 1952 Cornell U. Postdoctoral work in Armed Forces Institute of Pathology. Articles in "American Journal of Veterinary Research," "Farm and Home Science."

**SIGLER, WILLIAM F.** (1947) Prof. and Head, Dept. of Wildlife Management. BS 1940, MS 1941 and PhD 1947 Iowa State U. Listed in "American Men of Science," "Who Knows and What," "Who's Who in the West," "National Roster of Scientific and Specialized Personnel." Author of "Wildlife Law Enforcement." Articles in Experiment Station bulletins, "Journal of Wildlife Management," "American Fishery Transactions," "Copeia," "The Utah Fish and Game Magazine."

**SINGLETON, ANSEL O.** (1955) Captain, USAF; Asst. Prof. of Air Science. BA 1949 Centre C.

**SJOBLOM, WALLACE D.** (1952) County Agricultural Agent; Ext. Asst. Prof. BS 1952 USU.

**SKIDMORE, C. JAY** (1950) Asso. Prof. of Sociology. BS 1943 and MS 1944 U of U, EdD 1949 Columbia U. Postdoctoral work and fellowship at Merrill-Palmer School. Co-author of "Marriage Consulting." Articles in Experiment Station Bulletin, "The Eleusis of Chi Omega," "The Improvement Era."

**SLAUGH, OWEN** (1946) Asso. Prof. of Automotive Mechanics in the Dept. of Industrial and Technical Education. BS 1952 and MS 1957 USU. Articles in "Utah Magazine," "Deseret News" and "Salt Lake Tribune."

**SMART, ROSS A.**, (1957) Asst. Prof. of Veterinary Science. BS 1950 U of Idaho, DVM 1957 Colorado State U.

**SMITH, ALBERT B.** (1952) Instr. in Engineering Drawing. BS 1951. Author of ten "Farm Electrification" Leaflets.

**SMITH, ANNA MARIE** (1948) Instr. in Library Science. BA 1928 Park C., BSLs 1948 U of Denver. Article in "The Horn Book."

**SMITH, ARTHUR D.** (1937) Prof. of Range Management. BS 1936 USU, MS 1937 U of California, PhD 1957 U of Michigan. Listed in "American Men of Science," "Who Knows and What," "Who's Who in the West." Co-author of "Range Management." Articles in "Journal of Range Management," "Journal of Forestry," "Journal of Wildlife Management," "Utah Fish and Game Bulletin," "The Stockman's Review," "Farm and Home Science."

**SMITH, HARRY H.** (1927) Livestock Marketing Specialist. BS 1920 U of Nebraska, MS 1926 Colorado State U.

**SMITH, HUBERT W.** (1947) Prof. of English. AB 1920 Park C., MS 1933 North-Western U, PhD 1949 U of Pennsylvania. Listed in "Directory of American Scholars," "Who's Who in American Education." Articles in "Books Abroad," "Teachers College Journal," "Microfilm Abstracts."

**SMITH, R. L.** (1955) Asst. Prof. of Agronomy. BS 1951 and MS 1952 USU, PhD 1955 UCLA. Listed in "Soil Science of America," "International Society of Soil Science," "American Society of Plant Physiologists," "American Society of Horticultural Science." Articles in "Soil Science," "Plant Physiology," "Farm and Home Science."

**SMITH, WILLIAM LLOYD** (1954) County Agricultural Agent, Ext. Asst. Prof. BS 1953 Rick's C., MS 1956 USU. Listed in "County Agent's Directory."

**SMITH, WINSLOW WHITNEY** (1946) Prof. and Head, Dept. of Bacteriology and Public Health. BA 1933 and MA 1936 U of U, PhD 1939 U of Wisconsin. Listed in "Who's Who in the West," "American Men of Science," "Who Knows and What." Author of movie, "Grams Stain." Articles in "Journal of Bacteriology," "Ecology," "The Sanitarian."

**SORENSEN, EVAN J.** (1955) Freshman Coach, Instr. in Physical Education. BS 1947 and MS 1954 USU.

**STARKEY, EUGENE E.** (1957) Asst. Prof. of Dairy Husbandry. BS 1952 California State Polytechnic C, MS 1954 and PhD 1958 U of Wisconsin.

**STEFFEN, HYRUM** (1937) Asso. Prof. of Animal Husbandry. BS 1937 USU, MS 1950 U of Illinois. Listed in "American Men of Science." Articles in "Farm and Home Science."

**\*STENQUIST, LEE B.** (1954) Internal Auditor. BS 1947 BYU.

\*On leave



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**STEVENS, KENNETH R.** (1931) Prof. of Bacteriology and Public Health. BS 1927 BYU, MS 1929 and PhD 1932 Rutgers U. Postdoctoral work U of Illinois. Listed in "American Men of Science." Author of "Elementary Bacteriology Laboratory Manual." Articles in "Soil Science," "Ecology," "Journal of the American Chemical Society," "Industrial Engineering Chemical Analytical Edition," "Journal of Bacteriology," "Farm and Home Science."

**STEVENS, VELYN B.** (1945) County Home Agent, Ext. Asst. Prof. BS 1926 BYU.

**STEVENSON, EVAN N.** (1955) Manager, Student Union; Coordinator, Student Activities. BS 1951 BYU.

**STEWART, JOHN J.** (1947) Editor of University Publications; Asst. Prof. of English and Journalism. BS 1949 USU, MS 1957 U of Oregon. United Press Correspondent and Bureau Manager, newspaper reporter and editor, freelance writer, extension service editor; head of USU News Bureau; member, Sigma Delta Chi.

**STODDARD, GEORGE E.** (1943) Prof. of Dairy Industry. BS 1943 U of Idaho, MS 1948 and PhD 1950 U of Wisconsin. Listed in "Who's Who in the West" and "American Men of Science." Articles in "Journal of Dairy Science," "Journal of Animal Science," "Agricultural and Food Chemistry."

**STODDART, L. A.** (1935) Prof. and Head, Dept. of Range Management. BS 1931 and MS 1932 Colorado State U, PhD 1934 U of Nebraska. Listed in "Who's Who in America" and "American Men of Science." Author of "Range Management" and "Technical Writing." Articles in "Journal of Range Management," "Agricultural and Food Chemistry," "Journal of Animal Science," "Ecology," "Journal of Plant Physiology," "Farm and Home Science," "Agronomy Journal," "Western Livestock Journal," "National Wool Grower," Experiment Station and Extension Service bulletins. Faculty Research Lecturer, 1945.

**STOKER, GOLDEN L.** (1945) Asso. Prof. of Agronomy. BS 1932 and MS 1933 USU. Articles in "Journal of the American Society of Agronomy," "Farm and Home Science."

**STOKES, ALLEN W.** (1952) Asso. Prof. of Wildlife Management. BS 1933 Haverford C, MA 1941 Harvard U, PhD 1952 U of Wisconsin. Listed in "American Men of Science." National Science Foundation Senior Postdoctoral Fellowship 1957; recipient of Wild-

life Society Award 1952 for "outstanding publication in wildlife ecology." Articles in "Wildson Bulletin," "Journal of Wildlife Management," "Ecology."

**STOKES, DARRELL L.** (1941) County Agricultural Agent. Ext. Asso. Prof. BS 1938 USU.

**STONE, DAVID R.** (1946) Asso. Prof. of Psychology. BA and MA 1943 U of U, PhD 1946 U of Chicago. Articles in "Journal of Education Psychology," "Junior College Journal." Member Phi Delta Kappa, Phi Kappa Phi, American Psychology Assn., International Reading Assn.

**STREET, JOSEPH C.** (1956) Asst. Prof. of Animal Husbandry. BS 1950 and MS 1952 Montana U, PhD 1954 Oklahoma State U. Articles in "Journal of Agricultural and Food Chemistry."

**STRINGHAM, GLEN E.** (1957) Instr. in Agricultural Engineering. BS 1955 USU.

**STRONG, DOUGLAS C.** (1953) Asst. Prof. of Agricultural Economics. BS 1943 and MS 1953 USU, PhD 1957 Michigan State U. Co-author of Experiment Station bulletins and articles in "Poultry Science." Member American and Western Farm Economic Assns., Western Water Resource Development Committee and Western Regional Technical Research Committees.

**SULLENBERGER, ROBERT A.** (1957) Instr. in Tool Engineering. BS 1951 USU.

**SUMMERS, LOWELL P.** (1946) Asso. Prof. of Industrial and Technical Education. BS 1940 and MS 1956 USU. Member "Institute of Aeronautical Sciences." Civil Aeronautics Adm. licensed instructor and authorized inspector.

**SWENSON, DAN H.** (1948) Asst. Prof. of Industrial and Technical Education. BS 1940, MS 1949. Doctoral work 1954 USU.

**SWINDLE, KARMA P.** (1946) County Home Agent, Ext. Asso. Prof. BA 1929 BYU.

**TAYLOR, J. GOLDEN** (1955) Asst. Prof. of English. BS 1936 and MA 1939 BYU. Articles in USU Monograph series and "Western Humanities Review."

**TAYLOR, MORRIS H.** (1944) Asso. Prof. of Agricultural Economics; Extension Livestock Marketing Specialist. BS 1937 USU, MS 1940 U of Wisconsin.

**TAYLOR, STERLING A.** (1949) Prof. of Agronomy. BS 1941 USU, PhD 1949 Cornell U. Listed in "American Men of Science," "Who's Who in the West," "Who's Who in American Education." Articles in "Farm and Home Science," "Soil Science," "La Hacienda," "Agronomy Journal," "American Plant Food Journal," "Agricultural Engineering," "USDA Yearbook of Agriculture 1955 and 1957," "Farm Journal," "American Vegetable Grower," "What's New in Crops and Soils."

**TAYLOR, THOMAS A.** (1951) Instr. in Elementary Education; BS 1939. Teaching certificate 1941 and MS 1954 USU. Taught high school science and coached at Payette, Idaho 1941-43; taught high school science and coached at Woodland, Wash., 1943-46; coordinator of instructional materials at Toppenish, Wash. 1946-51.

**TENSMEYER, LOWELL G.** (1957) Asst. Prof. of Chemistry; BA 1952 and PhD 1957 U of U; Asst. Prof. at Ohio U 1956-57. Post-doctoral work U of U. Articles in "Journal of Chemical Physics."

**TERASAWA, HARUKO** (1955) Instructor in Clothing, Textiles and Related Arts. BA 1953 U of U; MS 1956 Pennsylvania State U.

**TEZAK, WILLIAM V.** (1955) Asst. Prof. of Business Administration and Secretarial Science; AB 1947 Western State C of Colorado; MBA 1948 U of Denver. Doctoral work Indiana U.

**THAIN, ALDYTH.** (1945) Asso. Prof. of Languages; BS 1919 USU, Diplome de Hautes Etudes de Langue et Litterature Francaise, U of Grenoble, France, 1926; MA 1930 U of So. California. Doctoral work 1932 U of U, U of Mexico.

**THATCHER, RAY H.** (1944) County Agriculture Agent. Ext. Asst. Prof. BS 1942 USU.

**THOMAS, DON W.** (1954) Asso. Prof. of Veterinary Science; Extension Specialist. BS 1949 USU, DVM 1953 Iowa State C; member Utah Vet. Med. Assn., Intermountain Vet. Med. Assn., Am. Vet. Med. Assn.; Secretary, Utah Poultry Improvement Comm.; Supervisor, Nat'l Poultry and Turkey Improvement Plans in Utah. Author of Extension bulletins and several popular articles in newspapers and farm magazines.

**THOMAS, JAMES ALAN** (1952) Asst. Prof. of Veterinary Science. DVM 1946 Colorado State U. Listed in AVMA directory.

**THORNE, D. WYNNE** (1939) Director of Agricultural Experiment Station and University Research. BS 1933 USU, MS 1934 and PhD 1936 Iowa State C. Listed in "American Men of Science," "Who's Who in America." Co-author of "Irrigated Soils;" articles in "Journal of Bacteriology;" "Soil Science;" "Agronomy Journal;" "World Crops." Research Asst. Prof. Iowa State C. 1936-37; research Asso. U of Wis.; 1937-38 summers. Asso. Prof. Agronomy, Texas A & M, 1937-39.

**THORNLEY, GWENDELLA** (1947) Asst. Prof. of Speech Chairman of annual Poetry Festival. BS 1940 and MS 1947 USU. Graduate work U of U, U of California. Listed in "Speech Assn. of America." Compiled and edited USU Monograph, "How Beautiful Upon the Mountains;" compiled and edited each annual Poetry Speaking Festival Syllabus since 1947; article in "U. E. Journal;" original poetry in "Listen my Children" and "Utah Sings."

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**WALKER, RUDGER H.** (1938) Dean, College of Agriculture; Prof. of Agriculture. BS 1923 BYU, MS 1925 and PhD 1927 Iowa State C. Fellow, American Assn. for the Advancement of Science; Member Board of Trustees, American U of Beirut; listed in "American Men of Science," "Who's Who in America," "Who's Who in the West." Author of Experiment Station bulletins and technical journal articles published in "Science," "Journal of the American Society of Agronomy," "Journal of Bacteriology," "Soil Science," "Food and Agriculture Organization of the U.N." Member of US National Commission for UNESCO; member of American Council of Education Committee on Institutional Project Abroad; member of National Research Advisory Committee on Sugar.

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**Grant, Sheldon**  
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**Smith, T. Gordon**  
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The elementary teachers of Iron County School District serve as critic teachers in the Division of Education.

**Dahl, Paul E.**  
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**Helland, Eugene**  
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## Collaborators in Teaching

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Biologist (Ecology)

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Sanitarian

*The atmosphere conducive to  
wholesome education is charged  
with hope, purpose, and enthusiasm.*

*If thou wilt receive profit, read  
with humility, simplicity and faith,  
and seek not at any time the fame  
of being learned. Thomas A. Kempis*

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*For a Calendar of Conferences and Shortcourses, etc., please see pages 268-270.*

*For a Calendar of the 1958-59 Football and Basketball Games, please see page 252.*





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