In any season, the Aggie Tower and Campus are picturesque.
Utah State University

Founded at Logan in 1888

1960-61 Catalog
## USU Calendar, 1960-61

### Fall Quarter (1960)
- **September 14, Wednesday**
  General Staff Meeting
- **September 15, 16**
  Utah Conference on Higher Education
- **September 19, Monday**
  University Faculty Meeting
- **September 26, Monday**
  Guidance Tests
- **September 27, Tuesday**
  Guidance Tests
- **September 28, Wednesday**
  Orientation
- **September 29, Thursday**
  Orientation
- **September 30, Friday**
  Registration
- **October 1, Saturday**
  Registration
- **October 3, Monday**
  Class Instruction Begins
- **October 4, Tuesday**
  Late Registration Fee Effective
- **October 21, Friday**
  Last Day for Changing Registration
- **October 29, Saturday**
  Homecoming
- **November 24, 25, Thursday, Friday**
  Thanksgiving Recess
- **December 16, Friday**
  Classwork Ends
- **December 19-22, Monday-Thurs.**
  Final Examination Week

### Winter Quarter (1961)
- **January 3-4, Tuesday-Wednesday**
  Registration
- **January 5, Thursday**
  Class Instruction Begins
- **January 6, Friday**
  Late Registration Fee Effective
- **January 25, Wednesday**
  Last Day for Changing Registration
- **March 14, Tuesday**
  Classwork Ends
- **March 15-18, Wednesday-Saturday**
  Final Examination Week

### Spring Quarter (1961)
- **March 24-25, Friday-Saturday**
  Registration
- **March 27, Monday**
  Class Instruction Begins
- **March 28, Tuesday**
  Late Registration Fee Effective
- **April 14, Friday**
  Last Day for Changing Registration
- **May 30, Tuesday**
  Holiday
- **June 5, Monday**
  Classwork Ends
- **June 6-9, Tuesday-Friday**
  Final Examination Week
- **June 9, Friday**
  Baccalaureate
- **June 10, Saturday**
  Commencement

### Summer Quarter (1961)
- **June 19, Monday**
  First Sessions Begins
- **July 21, Friday**
  First Session Ends
- **July 25, Tuesday**
  Second Session Begins
- **August 25, Friday**
  Second Session Ends
Your Guide to Catalog Contents

Departments with Their Office Locations, 4
Board of Trustees and Administrators, 5
Schedule of Games, 6
Campus Map and Photographs of Buildings,
Following Page 6
General Information on the University, 7
Explanation of Catalog Symbols, 11
Admission; Entrance Requirements, 12
Registration and Credits, 13
Lower Division Requirements, 18
Upper Division Requirements, 20
Graduation Requirements, 21
Tuition and Other Fees, 24
The Library, 26

University College, 27
Liberal Studies, 30
Dept. of Bacteriology and Public Health, 32
Dept. of Chemistry, 35
Dept. of English and Journalism, 39
Dept. of Geology, 45
Dept. of Landscape Architecture and
Environmental Planning, 46
Dept. of Languages, 48
Dept. of Mathematics, 53
Dept. of Physics, 55
Dept. of Speech, 58
Dept. of Zoology, 61

College of Agriculture, 67
Dept. of Agricultural Economics, 73
Dept. of Agronomy, 76
Dept. of Animal Husbandry, 80
Dept. of Applied Statistics, 83
Dept. of Botany and Plant Pathology, 84
Dept. of Dairy Industry, 86
Dept. of Horticulture, 89
Dept. of Poultry Husbandry, 93
Dept. of Veterinary Science, 94
Agricultural Experiment Station, 281
Cooperative Extension Service, 289

College of Business and Social Sciences, 97
Dept. of Business Administration and
Secretarial Science, 100
Dept. of Economics, 110
Dept. of History and Political Science, 112
Dept. of Sociology and Social Work, 116

College of Education, 121
Dept. of Agricultural Education, 125
Dept. of Education, 126
Dept. of Fine Arts, 133
Dept. of Health, Physical Education and
Recreation, 143
Library Science, 150
Dept. of Psychology, 151
Bureau of Educational Research, 287

College of Engineering, 157
Dept. of Civil and Irrigation Engineering, 161
Dept. of Electrical Engineering, 169
Dept. of Mechanical Engineering, 172
Dept. of Tool and Manufacturing Engineer-
ing, 176
Dept. of Industrial and Technical Educa-
tion, 178
Engineering Experiment Station, 284

College of Family Life, 191
Dept. of Clothing and Textiles, 194
Dept. of Family Living and Child Develop-
ment, 196
Dept. of Food and Nutrition, 199
Dept. of Homemaking Education, 201
Dept. of Household Administration, 203

College of Forest, Range and Wildlife
Management, 205
Dept. of Forest Management, 209
Dept. of Range Management, 213
Dept. of Wildlife Management, 216

Division of Military Science and Tactics and
Air Science, 219
Dept. of Military Science and Tactics, 224
Dept. of Air Science, 227

School of Graduate Studies, 233
Summer School, 245
Division of Off-Campus Education, 247
Branch Colleges, 253
College of Southern Utah, 255
Snow College, 256

Student Services and Activities, 257

Research Programs, 277
Division of University Research, 279
Agricultural Experiment Station, 281
Engineering Experiment Station, 284
Utah Scientific Research Foundation, 285
School of Graduate Studies, 286
Bureau of Educational Research, 287
Utah Cooperative Wildlife Research Unit, 287

Rocky Mountain Fisheries Investigations, 288
Cooperative Extension Service, 289
Information Services and University Develop-
ment, 293
Alumni Association and Graduates of 1959, 297
University Faculty and Collaborators, 307

Index, 329
University Departments of Instruction

Agricultural Economics  
Office: Agricultural Science 135

Agricultural Education  
Office: Agricultural Science 121

Agronomy  
Office: Agricultural Science 225

Air Science  
Office: Military Science 104-B

Animal Husbandry  
Office: Animal Husbandry 307

Applied Statistics  
Office: Agricultural Science 19

Bacteriology and Public Health  
Office: Plant Industry 310

Botany and Plant Pathology  
Office: Plant Industry 204

Business Administration and Secretarial Science  
Office: Main 324

Chemistry  
Office: Widtsoe Hall 201

Civil and Irrigation Engineering  
Office: Engineering 305

Clothing and Textiles  
Office: Family Life 204

Dairy Industry  
Office: Animal Husbandry 101

Economics  
Office: Main 316

Education  
Office: Main 181

Electrical Engineering  
Office: Mechanic Arts 200

English and Journalism  
English Office: Library 320  
Journalism Office: Main 182
Photography Office: Temporary Building G

Family Living and Child Development  
Office: Family Life 114

Fine Arts  
Office: Main 333

Food and Nutrition  
Office: Family Life 102-B

Forest Management  
Office: Forestry 401

Geology  
Office: Main 286

Health, Physical Education and Recreation  
Office: Smart Gym 26

History and Political Science  
History Office: Main 275  
Political Science Office: Main 103

Homemaking Education  
Office: Family Life 104-B

Horticulture  
Office: Agricultural Science 204-B

Household Administration  
Office: Family Life 104-B

Industrial and Technical Education  
Industrial Education: Mechanic Arts 104  
Aeronautics Office: Technology 2  
Automotive Office: Technology 1  
Welding Office: Mechanic Arts 115

Landscape Architecture and Environmental Planning  
Office: Main 7

Languages  
Office: Main 360-C

*Liberal Studies  
Office: Library 306

*Library Science  
Office: Library Mezzanine

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 and Social Work  
Office: Main 212

Speech  
Office: Main 123

Tool and Manufacturing 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 Board of Trustees

ALMA SONNE
Logan
Chairman

FERN B. ERCANBRACK
Provo
Vice Chairman

NEWELL V. SANDERS
Kaysville

R. J. POTTER
Garland

EVE S. ASHTON
Vernal

HENRY R. HURREN
Logan

RALPH S. BLACKHAM
Moroni

DAVID W. EVANS
Salt Lake City

JOSEPH ROSENBLATT
Salt Lake City

PHILLIP A. BULLEN
Salt Lake City

REED W. FARNSWORTH
Cedar City

O. C. HAMMOND
Ogden

LAMONT F. TORONTO
Salt Lake City

Secretary of State
Ex-officio member

JOSEPH F. COWLEY
Salt Lake City

President, Alumni Assn.
Ex-officio

Secretary to the Board

L. MARK NEUBERGER
Logan

Officers of Administration

DARYL CHASE
President

M. R. MERRILL
Vice President

L. MARK NEUBERGER
Dean of Academic Administration

DEE A. BROADBENT
Business Manager and Treasurer

SYLVAN ERICKSON
Controller

J. ELLIOT CAMERON
Dean of Students

LEAH DUNFORD
Dean of Women

J. STEWART WILLIAMS
Dean, School of Graduate Studies

R. H. WALKER
Dean, College of Agriculture

ROBERT P. COLLIER
Dean, College of Business
and Social Sciences

JOHN C. CARLISLE
Dean, College of Education

DEAN F. PETERSON
Dean, College of Engineering

DOROTHY T. DYER
Dean, College of Family Life

J. WHITNEY FLOYD
Acting Dean, College of Forest, Range and Wildlife Management

CARLTON F. CULMSEE
Dean, University College

ROYDEN C. BRAITHWAITE
Director, College of Southern Utah

FLOYD S. HOLM
Director, Snow College

LEE GRANDE NOBLE
Director, Summer School and Off-Campus Education

LEROY A. BLASER
Director, Alumni Affairs, Information Services and University Development

D. WYNE THORNE
Director, Agricultural Experiment Station and University Research

VAUGHN E. HANSEN
Director, Engineering Experiment Station

CARL FRISCHKNECHT
Director, Cooperative Extension Service

H. B. HUNSAKER
Director, Athletics

ASA L. BEECHER
Acting Registrar

MILTON C. ABRAMS
Librarian
### USU 1960 Football Games

<table>
<thead>
<tr>
<th>Date</th>
<th>Opponent and Place</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 19</td>
<td>Texas Western at El Paso¹</td>
<td>8 p.m.</td>
</tr>
<tr>
<td>September 24</td>
<td>Montana State University at Missoula</td>
<td>1:30 p.m.</td>
</tr>
<tr>
<td>October 1</td>
<td>Denver University at Logan</td>
<td>1:30 p.m.</td>
</tr>
<tr>
<td>October 8</td>
<td>University of Idaho at Boise¹</td>
<td>8 p.m.</td>
</tr>
<tr>
<td>October 15</td>
<td>University of New Mexico at Albuquerque</td>
<td>8 p.m.</td>
</tr>
<tr>
<td>October 22</td>
<td>Colorado State University at Logan</td>
<td>1:30 p.m.</td>
</tr>
<tr>
<td>October 29</td>
<td>Brigham Young University at Logan²</td>
<td>1:30 p.m.</td>
</tr>
<tr>
<td>November 5</td>
<td>University of Wyoming at Logan</td>
<td>1:30 p.m.</td>
</tr>
<tr>
<td>November 12</td>
<td>College of Pacific at Stockton¹</td>
<td>8 p.m.</td>
</tr>
<tr>
<td>November 19</td>
<td>University of Utah at Salt Lake City</td>
<td>1:30 p.m.</td>
</tr>
</tbody>
</table>

¹Non-conference games  
²Homecoming

### USU 1960-61 Basketball Games

#### Pre-Season

<table>
<thead>
<tr>
<th>Date</th>
<th>Opponent and Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 3</td>
<td>New York University at Madison Square Garden</td>
</tr>
<tr>
<td>December 5</td>
<td>University of Detroit at Detroit</td>
</tr>
<tr>
<td>December 7</td>
<td>University of Nebraska at Lincoln</td>
</tr>
<tr>
<td>December 12</td>
<td>Blue Grass Tournament at Louisville, Kentucky</td>
</tr>
<tr>
<td>December 13</td>
<td>Blue Grass Tournament at Louisville, Kentucky</td>
</tr>
<tr>
<td>December 16</td>
<td>Providence College at Logan</td>
</tr>
<tr>
<td>December 20</td>
<td>Kent State University at Logan</td>
</tr>
<tr>
<td>December 27</td>
<td>25th Annual All-College Basketball Tournament at Oklahoma City</td>
</tr>
<tr>
<td>December 28</td>
<td>25th Annual All-College Basketball Tournament at Oklahoma City</td>
</tr>
<tr>
<td>December 29</td>
<td>25th Annual All-College Basketball Tournament at Oklahoma City</td>
</tr>
</tbody>
</table>

#### Conference

<table>
<thead>
<tr>
<th>Date</th>
<th>Opponent and Place</th>
<th>Day of Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 7</td>
<td>Utah at Logan</td>
<td>Saturday</td>
</tr>
<tr>
<td>January 13</td>
<td>Wyoming at Laramie</td>
<td>Friday</td>
</tr>
<tr>
<td>January 14</td>
<td>Colorado State University at Fort Collins</td>
<td>Saturday</td>
</tr>
<tr>
<td>January 21</td>
<td>Montana at Logan</td>
<td>Saturday</td>
</tr>
<tr>
<td>January 27</td>
<td>Brigham Young University at Provo</td>
<td>Friday</td>
</tr>
<tr>
<td>February 2</td>
<td>Denver at Denver</td>
<td>Thursday</td>
</tr>
<tr>
<td>February 4</td>
<td>New Mexico at Albuquerque</td>
<td>Saturday</td>
</tr>
<tr>
<td>February 11</td>
<td>Brigham Young University at Logan</td>
<td>Saturday</td>
</tr>
<tr>
<td>February 17</td>
<td>Colorado State University at Logan</td>
<td>Friday</td>
</tr>
<tr>
<td>February 18</td>
<td>Wyoming at Logan</td>
<td>Saturday</td>
</tr>
<tr>
<td>February 23</td>
<td>Montana at Missoula</td>
<td>Thursday</td>
</tr>
<tr>
<td>February 25</td>
<td>Utah at Salt Lake City</td>
<td>Saturday</td>
</tr>
<tr>
<td>March 3</td>
<td>New Mexico at Logan</td>
<td>Friday</td>
</tr>
<tr>
<td>March 4</td>
<td>Denver at Logan</td>
<td>Saturday</td>
</tr>
</tbody>
</table>
Utah State University
Campus Map
and Photographs
Key to Buildings
1. Amphitheater
2. Mechanic Arts
3. Old Main
4. Information Services and Alumni Affairs
5. President's Home
6. Smart Gym
7. Heating Plant
8. Forestry
9. Home Management House
10. LDS Institute
11. Parking Space
12. Music
13. Sorority and Fraternity Houses
14. Romney Stadium
15. Military Science
16. Nelson Field House
17. Student Union
18. Widtsoe Chemistry
19. Plant Industry
20. Animal Industry
21. Engineering
22. Research Foundation
23. Family Life
24. Library
25. Lund Hall
26. Moen Hall
27. Greaves Hall
28. Reeder Hall
29. Merrill Hall
30. Greenhouses
31. Technology
32. Rural Arts
33. Peterson Agricultural Science
34. Forestry and Biological Sciences
35. Veterinary Science
36. Plant Maintenance
37. Women's Co-op Houses
38. Bullen Hall
39. Richards Hall
40. Tennis Courts
41. Bowen Elementary School
42. Baseball Diamond
43. Car Maintenance
44. Art Barn
45. Newman Center
46. Engineering and Technology
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.

USU 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.

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.

USU, 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 USU 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 homemaking 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., of the U. S. State Department, to give 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 nearly three 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. All Board members serve free gratis. The Board elects its own chairman and vice-chairman, and appoints a secretary.

Dr. Daryl Chase is the tenth president of USU. He was appointed in 1954. Previous presidents, and the year of their appointment, have been as follows: J. W. Sanborn, 1890; J. H. Paul, 1894; J. M. Tanner, 1896; W. J. Kerr, 1900; John A. Widtsoe, 1907; E. G. Peterson, 1916; Franklin S. Harris, 1945; Louis L. Madsen, 1956, and Henry Aldous Dixon, 1958.

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 is also listed by other accrediting agencies.

College of Engineering is accredited by the American Society for Engineering Education, and its Departments of Electrical Engineering and Civil and Irrigation 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.
10 Utah State University

Major Faculty Committees, 1960

Committee on Professional Relationships and Faculty Welfare:


Curriculum Committee:


The ink of the scholar may be more precious than the blood of the martyr.
Explanation of

Catalog Numbering System:
Courses, Quarters, 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 individually approved undergraduate courses yield Graduate credit.

At the end of each course description 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.
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 Utah State University.

You will not be permitted to register until all admission requirements have been met.

Applications for admission and credentials from schools previously attended must be received two weeks prior to registration day.

If your application is received after this deadline but prior to registration day, you will be scheduled to register after the regular registration schedule is completed.

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, except that students who graduate from high schools outside Utah may be denied admission if their credentials do not show a grade point average of 2.0 (C) or better for all academic high school work completed.

Admission to the University does not imply permission to register for any course for which you have insufficient preparation. Deans and department heads may require prerequisites for certain courses.

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 your school program so as to meet the specific requirements for admission. If you fail to do this you may be delayed in starting your work at Utah State University 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.

Even though you are not a high school graduate 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 registration. Such examinations as College Entrance Examination Board, the School and College Ability Test, or other approved standardized tests which provide appropriate appraisal of scholastic abilities of the applicant shall be accepted for fulfilling this requirement.

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 Academic Standards Committee, enroll in the General Registration Unit of the Counseling Service. (See "Low Scholarship and Probation")

Transfers from other Colleges. The University does not grant collegiate credit for high school work in excess of graduation requirements. Transcripts of credit must accompany applications for admission when submitted by students who have attended other collegiate institutions. Transcripts submitted for evaluation become the property of the University, and are not returned.

If you transfer to Utah State from a junior college which has general group requirements, you will be considered as having completed USU group requirements if you present evidence of an associate degree. Without this evidence, you may be required to complete general lower division requirements.

Credit will be granted for work of satisfactory grade done in other accredited institutions. Transferred credit may be accepted for satisfaction of specific requirements if satisfactory evidence is presented that the work completed is equivalent to the work for which you wish it to be substituted.

If your transcripts from other colleges or universities show a grade point average of less than 2.0 (C) you may be denied admission to Utah State University. If you are admitted you are subject to the regulations regarding low scholarship students.

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.

Assignment of Adviser. When you have been admitted to USU and have indicated your proposed major field of study, your name is forwarded to the dean of the college concerned. He will assign you an adviser who will assist you in registration and vocational planning. You remain with the same adviser throughout your university program unless in consultation with your dean a new adviser is assigned or unless you change your major field.

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 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.

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 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 two credits in basic Military Science or Air Science or one credit in Physical Education, is the normal registration for any quarter.

Maximum Registration without approval for excess credit is set at seventeen quarter hours exclusive of two credits in basic Military Science, or Air Science, or one credit in 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 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 maintain 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 resi-
dence 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 students organization.

Low scholarship students shall be placed on "warned status" at the end of the first quarter that his average is below "C." If a student does not then attain a "C" average in the next succeeding quarter he will be placed on probation. He may also be placed on probation at the discretion of his Dean if the Dean feels his over-all achievement is unsatisfactory. Parents or guardians will be notified of the probational status by the Dean of Student's Office. Notation of probation shall be entered on the transcript of credits by the Registrar's Office.

If a student does not maintain a "C" average during the next succeeding quarter after being placed on probation, he will be suspended from his academic college. If a student is denied permission to re-register in any college of the University after two successive quarters of "warned" and "probationary" status respectively, he will be officially dropped from the University and will be required to remain out of the institution for a period of one full quarter before an application from him for permission to re-register will be considered. A student who feels that certain extenuating circumstances precipitated his low scholarship, and who can show some evidence that he may do better academically in succeeding quarters may petition to the Academic Standards Committee for permission to continue in the General Registration Unit without the intervening one quarter discontinuance. In the event that a student is granted permission to register, he must register in the General Registration Unit, and will be considered on a probationary status.

After a student who has been dropped for low scholarship has been out of the Institution for one quarter or more, he may apply for re-admission. Such application is made to the Academic Standards Committee. If permitted to register, he may register in the General Registration Unit on probationary status.

A student on probation in the General Registration Unit who does not maintain a "C" average may be denied permission by the Academic Standards Committee to re-register in that unit. In such cases the Chairman of the Academic Standards Committee will recommend to the President that the student seems unable to profit from the University experience and should be dropped from the University.

If a student is admitted on probation and fails to maintain a satisfactory grade point average for two quarters, he may be suspended at the end of the 2nd quarter if he
is coming directly into the University from high school. Students transferring from another collegiate institution, who are admitted on probation, may have only one quarter in which to remove probational status.

Students in the low scholarship group may not register for more than 15 credits per quarter exclusive of one hour of Physical Education, or two hours of 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.

Special Examination. 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.

Good actions speak for themselves.
Lower Division Requirements

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 or 30.
   b) When more technical courses are required they may be used to satisfy this group requirement if taken in any of the following sequences:
      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, 30.

(2) Exact Science.
Chemistry—any course of Lower Division grade.
Geology 1 or 3, 4.
Chemistry 31, Geology 31, Physics 31 are designed and integrated for general education.
Mathematics — any course of Lower Division grade except that Mathematics 20 may be used for Elementary Education majors only.
Physics—any course of Lower Division grade.

(3) Language and Arts.
Visual Arts 1, 10, 11; Music 1, 25, or 26, 27 or 28, 33. Theatre 1.
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.)
Speech—any course of Lower Division grade.

(4) Social Science.
Agricultural Economics 71, 72, 73, but only one of these courses (3 hours) can be counted.
Economics 51, 52.
History—any course of Lower Division grade.
Political Science 1, 10, 70.
Psychology 53.
Social Science 1, 5, 6, 7.
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. Members of the sponsor corps may substitute sponsor corps credit for Physical Education credit. All men students are required to take six quarters of work in Military Science, Air Science, or Physical Education.

You may sit crookedly, but judge rightly.
Upper Division Requirements

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.

As a freshman or sophomore you may register for upper division classes and receive credit toward senior college requirements, if such courses are recommended by your adviser and approved by the instructor. Courses so taken will count in the 60 credit hours of upper division required for graduation.

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.

**Graduation Requirements**

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 requirements 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, Family Life, 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 29 hours credits in the basic groups, as follows: Language, five; Basic Communications, 1, 2, 3, nine; Exact Science, five; Biological Science, five; and Social Science, five.
6. Complete 21 credits of elective work.
For additional information, see description 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.

ROTC is a four-year program consisting of two two-year courses: Basic and Advanced. Entrance into the Basic Course is elective, admission to the Advanced Course is both elective and selective. Upon entering either course, completion thereof 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 at Utah State University, exclusive of any home study credit and off-campus classes 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.

*He who breaks his word will by it be broken.*
Tuition and Other Fees

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

### Resident Students

<table>
<thead>
<tr>
<th>Item</th>
<th>First Quarter</th>
<th>Second Quarter</th>
<th>Third Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and Registration</td>
<td>$48</td>
<td>$48</td>
<td>$48</td>
</tr>
<tr>
<td>Building</td>
<td>6</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Student Body</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Athletic</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Class Fee</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Fees: $65

### Non-Resident Students

<table>
<thead>
<tr>
<th>Item</th>
<th>First Quarter</th>
<th>Second Quarter</th>
<th>Third Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and Registration</td>
<td>$48</td>
<td>$48</td>
<td>$48</td>
</tr>
<tr>
<td>Non-Resident</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Building</td>
<td>6</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Student Body</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Athletic</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Class Fee</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Fees: $105

### Special Fees

**Excess Registration Fee:** For each excess hour (except two hours of Military Science, Air Science, or one hour of Physical Education)...

Students may register for 19 hours per quarter 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 of 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...

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.

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

Additional transcript (Extra copies...

**Progress Report, Adviser furnished one copy free.** Additional copies...

**Note fee**

**Cap and Gown Rental—Bachelor of Science**

**Master of Science**

**Master's Degree Fee for binding and proofing thesis**

**University College—Students using the language laboratory equipment are required to pay a fee of $2 per quarter.**

**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: $35.00
- 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 Fee**

**Music—Individual Instruction with members of the College staff:**

- One lesson per week (10 lessons) per Quarter (1 credit)...
- 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...
- Practice Room without Piano, 1 hour per day per Quarter...
- Organ, 1 hour per day per Quarter...
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 W. Newman, Gwendella Thornley, Rex E. Robinson.

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.

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.

Love yourself and you will have no rivals.
The University Library maintains a program consistent with the growth and increased demands of the faculty and student body. 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.

(II) Special Libraries.

(A) Anne Carroll Moore Library, in the Edith Bowen Elementary School. A special collection of children's books and a working laboratory for the training school. (B) Audio-Visual Library, in the basement of Old Main. Provides film services on and off the campus. (C) Claypool Map Library, in the Geology department in Old Main. Features geologic maps as well as several other types which are available for general campus use. (D) 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.

A good book is an excellent companion.

(III) Resources of the Library include: (A) Approximately a quarter of a million volumes; (B) 2,600 periodical subscriptions; (C) Depository for 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 micro-films 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) It provides courses in a separate curriculum in the College of Education.

Under this latter program the requirements for a Class A Library certificate issued by the Utah State Department of Public Instruction may be filled. A Library minor may be completed in connection with a major in Education, and the courses can be used to meet the Library requirements of the Northwest Association of Secondary and Higher Schools.
University College

Carlton Culmsee, Dean
University College

General Education, 29

Liberal Studies, 30

Department of Bacteriology and Public Health, 32
  Bacteriology, 32
  Public Health, 32
  Medical Technology, 34

Department of Chemistry, 35

Department of English and Journalism, 39
  English, 39
  Journalism, 43
  Photography and Photographic Journalism, 44

Department of Geology, 45

Department of Landscape Architecture and Environmental Planning, 46

Department of Languages, 48
  Languages, 48
  Philosophy, 51
  Honors Courses, 52

Department of Mathematics, 53
  Mathematics, 53
  Mathematical Statistics, 54

Department of Physics, 55

Department of Speech, 58

Department of Zoology, 61
  Zoology, 61
  Entomology, 63
  Physiology, 64
  Pre-Dentistry, 65
  Pre-Medics, 66
  Nursing, 66

Degrees Offered:
  Bachelor of Science
  Master of Science
  Doctor of Philosophy
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.

University College includes the Departments of Bacteriology and Public Health; Chemistry; English, Journalism, and Photography; Geology; Landscape Architecture and Environmental Planning; Languages and Philosophy; Mathematics; Physics; Speech; Zoology.

General Education

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. (SP, W, S, Su) Staff

Physical Science

Administered by the staffs of the Departments of Chemistry; Geology; Physics.

Principles essential to understanding the physical universe. Elements of astronomy, chemistry, geology, and physics integrated for use in interpreting human experiences.

Chemistry 31. 3 credits. Geology 31. 3 credits. Physics 31. 4 credits.

Humanities (Languages and Arts)


Two years of foreign language are also recommended as an option for satisfaction of the Languages and Arts, or Humanities, group requirement.

Social Science


You are encouraged to broaden your liberal education with other courses in basic sciences and humanities, art, music, landscape architecture, political science, economics, and sociology.
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 colleges 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 from the 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 philosophy1; 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.

(C) Philosophy. Fourteen hours from the following: Philosophy 45, 50, 140, 141, 142, 160; Political Science 145, 146, 147.

1See Philosophy Division of Department of Languages. Political Science 145, 146 and 147 deal with political philosophies and are therefore relevant.
(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: Philosophy 45, 50, 140, 141, 142, 160; 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. 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. 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 three departments: English, American or Comparative Literature or the literature of a foreign language; Philosophy 45, 50, 140, 141, 142, 160; History; Political Science 145, 146, 147; Sociology 70; Economics 51, 52.

1Ten of these hours may be applied toward the group requirement in the field.

Do a good deed and throw it into the sea; it won't sink.
Department of

Bacteriology and Public Health
(Bacteriology, Public Health, Medical Technology)


Office in Plant Industry 310

Bacteriology and Public Health

Bachelor of Science Degree. For a General Bacteriology major you should take: Bacteriology 10 or 70, 71, 104-105 or 120-121, 110, 160, 168, 180, 201, 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, 107, 112, 116.

For a Public Health major you should take: Public Health 15, 50, 150, 155, 254; Bacteriology 10 or 70, 71, 160; Physiology 4 or 120; Zoology 3, 111, 116; Entomology 115; Physical Education 55, 135, 145; Psychology 100 or Family Living 100; Psychology 145 or Sociology 162; Foods and Nutrition 5, Chemistry 10, 11, 12.

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 5; 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 this 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 de-
gree. 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 other institution which also 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. Intended primarily for students in non-science fields. (Not open to students who have had Bacteriology 70.) (5F, W, S, Su) Stevens, Carter

70. General Bacteriology. For majors in science departments. (Not open to students who have had Bacteriology 10.) Prerequisite: Concurrent or previous registration in organic chemistry. (4W, S) Jones

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

*104. Dairy Bacteriology. Micro-organisms of milk and its products. Prerequisite: Bact. 10 or 70. (3S) Jones

*105. Dairy Bacteriology Laboratory. Two 3-hour labs. Prerequisite: Bact. 71, and previous or concurrent registration in Bact. 104. (2S) Jones

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

*120. Food Microbiology. Relationships of micro-organisms to food preservation, spoilage, and poisoning. Prerequisite: Bact. 10 or 70. (2F) Jones

*121. Food Microbiology Laboratory. (2F) Jones

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

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

168. Immunology. Prerequisites: Bact. 160 and Biochemistry. 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. (4W) Jones

*201. Systematic Bacteriology. Classification relationships. Prerequisite: Bact. 10 or 70. (2S) Smith

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

*Taught alternate years.
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


*151. Public and School Health Administration. Organization, administration and functions of health agencies. Prerequisite: P.H. 50. (3F) Staff

152. Family Health. A broad course on the fundamentals of healthful living. For juniors and seniors in Home Economics Education who are required for state of Utah certification to take a course in family health. Does not meet the school health requirement for state of Utah certification. (4) Staff

154. School Health Program. Satisfies state certificate requirements in health education for elementary and secondary levels. For juniors, seniors, and graduates. (3F, W, S) Smith


*156. School Health Methods. Objectives, methods, curricula, and materials. Prerequisite: P.H. 155. (3S) Staff

159. Public Health Laboratory Methods. Experience in the practice of the Public Health Laboratory. (3 to 15F, 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

Medical Technology

The University College offers courses which satisfy entrance requirements for Medical Technology internships in the United States and Canada. The University pro-
vides a three-year program 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: Bacteriology 10 or 70, 71, 131, 160, 168; Chemistry 3, 4, 5, 12, 190; Physiology 4; Physics 6; Zoology 3, 116. A hospital internship for twelve months shall be completed during the fourth year, which shall include instruction in Medical Technology 133, 134, 135, 136, 137, 138, 139. Utah State University has provision for instruction of laboratory technicians in this internship in the LDS hospitals in Salt Lake City and Ogden and St. Benedict’s hospital in Ogden. During this fourth year, you register for three quarters. (45 upper division credits in Medical Technology.) 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 P. B. Carter for further details.)

Medical Technology Courses

131. Clinical Laboratory Methods. Prerequisite: Bact. 71. (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) Carter

136. General Pathology Discussions. (2F) Carter

137. Clinical Laboratory Methods Discussion. (2W) Carter


139. Pathological Conference. (1S) Carter

*Taught alternate years.
Department of

Chemistry


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 schedule below will enable you to meet all these requirements.

Minor. A minimum of eight credits of upper division chemistry courses is required for a Chemistry Department approved minor. Suggested courses which will meet these requirements are: Chemistry 101, 115, 121, 122, 190.

Teaching Major. A teaching major in chemistry requires the completion of the following minimum program: Chemistry 3, 4, 5, 101, 115, 121, 122 and 190. Supporting courses to be taken are Physics 17, 18, 19 and Mathematics 35, 44, 97, 98, 99. 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, 131 or 140; Mathematics 35, 44 or 46, 97, 98, 99. Required professional education courses for the teaching certificate are listed by the College of Education.

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

All new graduate students must take entrance examinations in inorganic, organic, physical and analytical chemistry. These will be administered three days before registration day in the fall quarter and by special arrangement at other times.

Master of Science Degree. 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, and 190 may be used in filling the requirements for the Master's degree.

Before admission to candidacy for the degree, you will be required to pass examinations in General Chemistry, Qualitative Analysis, Quantitative Analysis, Organic Chemistry and Physical Chemistry.
Doctor of Philosophy Degree. The Chemistry Department offers advanced study and research leading to a degree of Doctor of Philosophy. Before admission to candidacy the student must fulfill the following requirements: (a) Pass a qualifying examination at the normal graduate level in analytical, organic, physical and inorganic chemistry. Ordinarily, this is to be taken before the beginning of the second academic year. (b) Demonstrate a reading comprehension of German and of Russian or French. (c) Pass a comprehensive examination in a field of specialization, not later than one academic year before the final examination on the thesis. (d) Present an acceptable statement of a thesis problem. The student should consult the School of Graduate Studies or the head of the department concerning other requirements.

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 giving courses in these areas. Detailed information may be found in this catalog under the School of Graduate Studies.

Curriculum for Chemistry Majors

**FRESHMAN**

<table>
<thead>
<tr>
<th>Courses</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 3, 4, 5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Mathematics 35, 46, 97</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>(or 34, 35, 36)</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>English 1, 2, 3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Military or Air Science or</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Physical Ed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

**SOPHOMORE**

<table>
<thead>
<tr>
<th>Courses</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics 98, 99, 110</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>(or 97, 98, 99)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry 121, 122, 115</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Physics 20, 21, 22</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Military or Air Science or</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Physical Ed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

**JUNIOR**

<table>
<thead>
<tr>
<th>Courses</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 190, 123</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Chemistry 104, 105, 106</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 109, 110, 111</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>German 1, 2, 3</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Electives, group requirements</td>
<td>3</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

**SENIOR**

<table>
<thead>
<tr>
<th>Courses</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 120, 121</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Chemistry 152, 153, 250</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 160</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Chemistry 198, 199</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Advanced Physical or Organic</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives, group requirements</td>
<td>8</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

**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 or equivalent. (6F, 5W, 5S)

**Staff**

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

**Lee**


**Staff**

31. Physical Science. Principles of chemistry essential to understanding the physical universe integrated for use in interpreting human experience. Intended to help meet the physical science group requirements. (3F, 3S)

**Staff**

3Mathematics 110 to be taken Junior year.
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) Staff

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, 115; Physics 20, 21, 22; Math. 99. (3F, 3W, 3S) Staff

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. (4W) Van Orden

109, 110, 111. Experimental Physical Chemistry. Laboratory work correlated with Chemistry 104, 105, 106. (1F, 2W, 1S) Ott

115. Quantitative Analysis. Basic theory and laboratory practice in gravimetric and volumetric analysis. Prerequisites: Chem. 5, Math. 35. (6S) Van Orden

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

121, 122. Organic Chemistry. Fundamentals of the chemistry of carbon compounds. Four lectures, four hours laboratory per week. Prerequisites: Chem. 5 or 11. (5F, 5W) Larson

123. Qualitative Organic Analysis. The classification, reactions and laboratory work involved in the identification of unknown organic compounds. Prerequisites: Chem. 115, 122. (4S) Larson

124. Organic Preparations. An advanced laboratory course in the synthesis of complex compounds. Prerequisite: Chem. 122. (3F) Larson

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

152. Quantitative Analysis. Theory and laboratory practice of complex formation, non-aqueous systems, precipitate formation, electroanalysis, and related topics as applied to quantitative analysis. Prerequisites: Chem. 106, 115. (3F) Staff


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

160. Undergraduate Seminar. Time arranged. (1W) 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 or 121. (5F) Van Orden

198. Undergraduate Research Problems. Credit arranged. (F, W, S) Staff

199. Undergraduate Thesis. (1F, 1W, 1S) Staff

215. Advanced Physical Chemistry. Fundamentals of chemical thermodynamics with application to selected problems. Prerequisite: Chem. 106. (3F) Staff

216. Advanced Physical Chemistry. Thermodynamics of solutions and introduction to statistical mechanics. Prerequisite: Chem. 215. (3W) Staff

217. Advanced Physical Chemistry. Chemical Kinetics, molecular structure and advanced topics. Prerequisite: Chem. 216. (3S) Staff

218. Quantum Chemistry. Wave-mechanical applications to problems of chemical bonding. Prerequisite: Chem. 216. (3F) Staff


228, 229. Theoretical Organic Chemistry. Structure and mechanism in organic chemistry with emphasis on electronic interpretations and kinetics. (3F, 3W) Staff

230. Synthetic Organic Chemistry. A study of recent methods of organic synthesis. (3S) Staff

231. Heterocyclic Compounds. (3F) Staff

232. The Colloidal State and Surface Chemistry. Application of physical-chemical principles to surface phenomena. Fundamental properties and theories of colloidally dispersed systems. Examples of colloidal behavior selected from diverse fields. Prerequisites: Chem. 215; Math. 99. (3W) Staff
233. Special Topics in Organic Chemistry. Staff
(3F, 3W, 3S)

250. Advanced Inorganic Chemistry. A study of the elements and their compounds. Based on the atomic structure. Prerequisite: Chem. 104. (85) Lee

252. Crystal Chemistry. An interpretation of chemical and physical properties of crystals. Structural properties derived from X-ray crystallography are emphasized. Prerequisites: Chem. 216; Math. 99. (85) Staff

253. Advanced Chemical Kinetics and Rate Theory. Fundamental principles governing reaction rates. Advanced topics. Prerequisite: Chem. 217, 219. (85) Staff

260. Graduate Seminar. Time arranged. (1F, 1W, 1S) Staff

272. Advanced Topics in Analytical Chemistry. Modern developments in quantitative analysis, methods of separation, statistical treatment of data, measurement of pH, and other topics. Prerequisites: Chem. 106, 152. (3F) Staff

273. Advanced Instrumental Analysis. Radiochemical methods, mass spectroscopy, electron microscopy. Prerequisites: Chem. 106, 153. (85) Staff

274. Advanced Analytical Chemistry. Special Problems. Credit arranged. (F, W, S) Staff

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. Credit arranged. (F, W, S) Greenwood

290. Toxicology. The effects of selected chemical compounds on living organisms. Prerequisites: Chem. 190 and 122. (85) Greenwood

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

292. Advanced Biochemistry: Biochemical Analysis. Problems in metabolism, biochemical methods of blood and urine analysis, with their applications to metabolism and to the diagnosis and treatment of disease. Prerequisite: Chem. 190. To accompany or follow Chem. 296. (2 or more S) Greenwood

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

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

295. Advanced Biochemistry: Enzymes. Enzymes and their functions in plants and animals. Prerequisites: Chem. 101, 190. (3W) Van Orden

296. Advanced Biochemistry: Principles of Metabolism. Carbohydrates, fats and proteins and their metabolism in plants and animals. Prerequisites: Chem. 101, 190. (3S) Van Orden

297. Advanced Biochemistry: Vitamins. Vitamins and hormones and their functions in plants and animals. Prerequisite: Chem. 190. (3F) Van Orden

298. Graduate Research. Credit arranged. (F, W, S) Staff

What does not come from the heart does not reach the heart.
English and Journalism
(English, Journalism, Photography, Photo Journalism)


English Office in Library 320
Journalism Office in Main 182
Photography Office in TG Building

English
You may take one of three majors in the English Department: (1) the Standard English major; (2) the English teaching major; (3) the American Studies major. In any of these majors, by completing the necessary requirements in Education, you may qualify for a teaching certificate. In two of these majors, the Standard English major and the American Studies major, you may qualify for admission into the Graduate School. With the English teaching major you cannot qualify for graduate work.

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.

English Teaching Major. English Teaching major is same except for language requirements.

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, 152, 154, 155, 156, 157, 158.

(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.)
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 in English 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 a test on 15 books recommended by the English Department; (7) pass successfully the final oral examination under the auspices of the Graduate School.

Master of Science in American Studies. As a candidate for the Master's degree in American Studies you are required to present a Bachelor's degree with American Studies, English, History, or Political Science as a major. Your course of study will be arranged in consultation with any member of the English Department, American Studies committee and is subject to approval by the chairman of the committee, Dr. Hubert W. Smith. The emphasis in your graduate work will be largely governed by (A) your own cultural and professional objectives and (B) your undergraduate course work.

Total-credit and examination requirements are in general the same as those for the Master's degree in English. However, the departmental qualifying examination will be administered by the American Studies committee and will cover primarily American Literature, American History and American Political Institutions.

A selection of the following courses may be applied toward satisfying requirements for the Master's degree in American Studies: English 150, 151, 152, 154, 155, 156, 157, 201, 252 and 253; History 143, 144, 152, 156, 171 and 175; Political Science 125, 127, 140, 180, 182, 201, 207, 208 and 209.

As many as 10 hours may also be drawn from upper division courses in the following subject matter fields: English and Comparative Literature, English and World History, Philosophy, Art, Music, Sociology, and Economics.

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 application to the Head of the English department.

English Courses

English for Foreign Students. (See Languages 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, S) Mortensen

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

12a. 12b. Practice in Composition. For students who wish to practice in composition beyond that given in Basic Communication. (2F, W, 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, Nielsen

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

36. Great Books and Ideas. Man's ideas about the modern world. (3S) Rice, Nielsen (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, S) Bullen

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

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

42. Readings in Mythology. (3W) Richards

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

48. Modern European Literature. (3F) Patrick

53. American Literature, Early Period. (5F, W, S) Smith, Hayward, Taylor

54. American Literature, Late Period. (5F, W, S) Smith, Hayward, Taylor

58. Modern American Literature. (3F) Staff

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. (3S) Morsberger

111. Technical Writing. The effective communication of ideas via the technical report and the scientific article. Intended for junior and senior students of engineering, forestry, and the physical and life sciences. Others admitted only with consent of instructor. (Needs of students majoring in arts, letters, education, business, or the social sciences are met by English 112.) (3F, W, S) Mortensen

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. (3F, W, S) Taylor, Fritzsche

117. Creative Writing (a) Short Stories. (3S) Rice
(b) Essays. (3F) Hayward
(c) Poetry. (3W) 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

134. Literary Criticism. Masterpieces of criticism from Plato and Aristotle to Croce. (4S) Culmsee

137. English Novel. A study of the English novel in the 18th and 19th centuries. (3S) Bullen

140. Classical Literature. A study of the literature of Greece. (5F) Richards

141. Roman Literature. A study of Roman literature in classical period. (5S) 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. (5F) Smith
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
153. 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; (h) Thoreau. Taught when required. (2) Staff
154. The Colonial Period in American Literature. An introduction to the germinal ideas of American thought and institutions as formulated by the Puritans and other writers of the period. (3F) Taylor
156. The American Literary Renaissance. The rise of social, political, philosophical, and religious liberalism and idealism as reflected by authors from Irving to Whitman, with special emphasis on the transcendentalist movement. (3S) Smith
157. Realism and Modernism in American Literature. The turn late in the nineteenth century to realism and naturalism in the works of Twain, Howells, James, Crane, Norris, Garland, and Dreiser. Twentieth century literature as a reflection of social, economic, and political issues growing out of America's industrialization and role of world dominance. (3S) Smith
158. Chaucer. (5F) Morsberger
159. Shakespeare. Comedies and History Plays. (5W) Patrick
160. Shakespeare The Tragedies. (5S) Vickers
161. Major English Authors. (a) Donne; (b) Johnson and Boswell; (c) Shelley; (d) Tennyson; (e) Browning; (f) Arnold. Taught when required. (2) Staff
162. Middle English Literature. A study of English literature from the 12th century to the renaissance. (3F) Frietzche
163. Readings in World Drama. (5F) Booth
164. Readings in World Drama. (5W) Booth
165. Milton. (3S) Rice
166. Literature of the English Renaissance. (5W) Frietzche
167. Restoration and Eighteenth Century. (5F) Bullen
168. The Romantic Period. (5W) Patrick
169. The Victorian Period. (5S) Booth
170. Readings and Conference. Time and credit arranged. Any quarter. Students must have the approval of the Head of the department. Staff
171. Thesis. Credit arranged. (F, W, S) Staff
172. Bibliography and Methods. Required of all candidates for the Master's degree in English. (3F) Smith
173. Anglo-Saxon. Required of all students only; recommended for first quarter of graduate study. (2F, W, S) Taylor, Frietzche
174. Seminar in Modern Criticism. (3F) Patrick
175. Seminar in American Literature. (1W) Smith, Culmsee, Taylor
176. Seminar in American Literature. (3S) Smith, Culmsee, Taylor
177. Reading of Middle English. (3F) Hendricks
178. Seminar in English Literature 1580-1685. (3W) Frietzche
179. Seminar in Eighteenth Century Literature. (3S) Hendricks
180. Seminar in Nineteenth Century Literature. (3F) Both
181. Independent Study. Independent study with credit arranged. Open only to graduate students in English. Time arranged. (2F, W, S) Staff
Journalism

Office in Main 182

For a major in Journalism you should complete Journalism 1 through 6, 12, 13, 14, 81, 91, 106, 112, 114, 125, 156 or 164, 166; Photographic Journalism 51, 151; English 1, 2, 3, 5, 58, 117a, b, or c; Philosophy 45.

You are urged to complete as many of the following as possible: Journalism 182; English 34, 35, 36, 41, 46, 53, 54, 60, 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) Allred

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, social responsibilities, and problems of reporting. Practical experience writing for newspapers. Prerequisite: Journ. 12. (6W) Klages

14. Reporting and Copyediting. Advanced reporting assignments. Laboratory exercises in editing copy, writing headlines, makeup. Prerequisites: Journ. 12, 13. (8S) Allred

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.) (8S) B. F. Hansen

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

106. American 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. (8S) 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. (3W) Stewart

*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. (3F) Stewart

*125. Editorial Responsibility. Editorials and other elements of the modern editorial page, writing of editorials; essentials of press law and ethics. (5F) Culmsee

156. Principles of Advertising. (See Business Administration Department, College of Business and Social Science, for description.) (5W) H. B. 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. (3S) Allred

*Taught alternate years.
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, 112, 125 and 156 or 164.

General service courses are available for students desiring instruction in fundamentals of photography. 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. Two lectures, lab arranged. Credit arranged. Maximum of 6 credits per quarter. (F, 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. Prerequisite: Photo. 51. Two lectures, one three-hour labs. (8S) 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, one three-hour lab. (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. Two lectures, one three-hour lab. (3F) Allen

Photography and Photographic Journalism

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. (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

*Taught alternate years.
Bachelor of Science Degree. For a major in Geology you must satisfactorily complete the following basic courses, Chemistry 10, 11; Civil Engineering 81; Mechanical Engineering 21, 22; English 111; Geology 3, 4, 5, 101, 102, 106, 108, 110, 111, 113, 114, 115, 118; Mathematics 35, 46; Physics 17, 18, 19; and Zoology 3. Recommended are Mathematics 97, 98, 99; Civil Engineering 84, 181; German 1, 2, 3; Photography 51; Chemistry 5, 12; and Physics 20, 21, 22.

Geology Club: The Geology Club, under general supervision of the department, is an organization for all geology majors. Regular attendance is required.

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 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


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


103. Engineering Geology. Application of geology to engineering problems. For seniors in Engineering. (8S) 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. (8S) Hardy


Landscape Architecture and Environmental Planning

PROFESSOR L. S. Morris, HEAD; INSTRUCTOR A. C. Tucher.

Office in Main 7

Landscape Architecture and Environmental Planning is concerned with the arrangement of land and the objects man places on it for use. The physical plan, 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 Landscape Architecture and Environmental Planning, you should take the following courses which provide: (1) Necessary instructional material directly concerned with Landscape Architecture and Environmental 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

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elem. of Land Planning, L.A. 3</td>
<td>3</td>
</tr>
<tr>
<td>Graphics, L.A. 29</td>
<td>3</td>
</tr>
<tr>
<td>History and Lit. of Physical Plans, L.A. 30</td>
<td>5</td>
</tr>
<tr>
<td>Algebra, Math. 34, 35</td>
<td>8</td>
</tr>
<tr>
<td>Trigonometry, Math. 46</td>
<td>5</td>
</tr>
<tr>
<td>General Botany, Botany 24, 30</td>
<td>10</td>
</tr>
<tr>
<td>English 1, 2, 3</td>
<td>9</td>
</tr>
<tr>
<td>Visual Arts 5</td>
<td>3</td>
</tr>
</tbody>
</table>

SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant Materials, L.A. 40, 41, 42</td>
<td>9</td>
</tr>
<tr>
<td>Architectural Design 60, 61, 62</td>
<td>6</td>
</tr>
<tr>
<td>Physical Science 31, 32, 33</td>
<td>9</td>
</tr>
<tr>
<td>Engineering Graphics, M.E. 21</td>
<td>3</td>
</tr>
<tr>
<td>Plane Surveying, C.E. 81, 82</td>
<td>6</td>
</tr>
<tr>
<td>Engineering Drawing 94</td>
<td>3</td>
</tr>
<tr>
<td>Sociology 70</td>
<td>5</td>
</tr>
<tr>
<td>Soils, Agronomy 56</td>
<td>4</td>
</tr>
<tr>
<td>Prin. &amp; Pract. Floriculture, Hort. 10</td>
<td>3</td>
</tr>
</tbody>
</table>

48
JUNIOR YEAR

Course                  Cr.
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
Econometrics 51, or Agr. Econ. 53        5
Electives                                6

SENIOR YEAR

Course                  Cr.
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

LA&EP 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) Tocher

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) Tocher

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

Landscape Architecture 47

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 aestheti­
   cal 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. (Su) 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) Tocher

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. (4F 4W, 4S) 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 Archi­
   tecture. Required of senior students. (1W) Morris

210. Advanced Problems in Design and Plan­
   ning. Time and credit arranged. (F, W, S)
   Staff
**Department of**

**Languages**
(Languages and Philosophy)


**Office in Main 360-A**

**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. Changing world conditions require that offerings in "critical" languages such as Russian be expanded when possible.

**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, Russian, Danish, Norwegian, Swedish, and Dutch.

In addition to the elementary courses listed below, permissible special examination credit would be listed, for example, as Norwegian 1, 2, 3. The same numbers would be used in connection with such other languages as are approved by the department and in which qualified personnel are available to conduct the examination.

**USU in Munich, Germany**

Through arrangement with the University of Munich, Germany, Utah State University will inaugurate in March, 1961, a plan of study in Europe for a limited number of undergraduates.

Students will spend the spring and summer in Europe and, upon successful completion of the pre-
scribed curriculum, will earn credits at USU equivalent to a full semester (a quarter and a half) of study—approximately 25 credits.

Accompanied by one or two USU professors and their wives, the students will leave for Munich at the end of the Winter Quarter (about March 15) and will return to the United States in September in time to enroll for the fall term and continue their studies in this country.

The first group will be limited to 30 students.

The course of study, to be taught by both USU and University of Munich professors, will be planned to give the students deeper insights into a foreign culture. In addition to taking intensive work in the German language, students will be enrolled in courses designed especially for American students and dealing with European history and governments and with the general area of the fine arts. Special seminars will crystallize the students' experience in music, art, and architecture. Study tours to various parts of Germany, Austria, and Italy, will be an important part of the program.

The program is not limited to USU students. Students from other colleges and universities may transfer to Utah State for participation in the program and return to their home campus after completion of their study abroad, taking the earned credits with them.

Eligibility requirements are as follows:

1. Students must have at least third-quarter sophomore standing at the time they begin the program in Munich.
2. Applicants must show good scholarship.
3. Applicants should have completed at least a year’s study of German in a college or university, or have acquired a speaking knowledge of German. Exceptions may be made for students of unusual promise.

Total cost, including round-trip by airplane, board and room, tuition, and the study tours in Europe, is expected to be $1600 or less per student.

Language Courses

French

1, 2, 3. Elementary French. (6F, 5W, 5S) Staff
4, 5, 6. Intermediate French. (3F, 3W, 3S) Staff
4a, 5a, 6a. Second-Year Conversation. Accompanies French 4, 5 and 6. Work will be largely in the language laboratory. Required of French majors, recommended for all students in Second-year French. (2F, 2W, 2S) Staff
105. Advanced Composition and Conversation. (3W) Staff
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 introduction to literary movements in France. Emphasizes the 19th century. (3S) Staff
110. French Phonetics. Principles of French pronunciation and their practical application. (3F) Staff
112. Nineteenth Century French Poetry. (3W) Staff
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) Staff
121. French Classic Drama. Plays of Corneille and Racine. (3W) Staff
122, 123. Nineteenth Century French Drama. Romantic and Realistic Schools. (3W, 3S) Staff
125, 126. Survey of French Literature. (3W, 3S) Staff
French Literature of the 18th Century. Emphasizes the philosophy of the period—Voltaire, Rousseau, Buffon, Diderot. (3F, 3W) Staff

Comedies of Beaumarchais and Marmontel. (3S) Staff

Nineteenth Century French Novel. (3F, 3W, 3S) Staff

German

Elementary German. (5F, 5W, 5S) Nielsen, Beyers, Staff

Intermediate German. (3F, 3W, 3S) Nielsen

Second-Year Conversation. Accompanies German 4, 5 and 6. Work will be largely in the language laboratory. Required of German majors, recommended for all students in Second-year German. (2F, 2W, 2S) Staff

Scientific German. An introduction to the reading of technical German. Readings in German in various scientific fields. Prerequisite: German 4 and 5. May replace German 6 for science majors. (3S) (Taught only on sufficient demand) Nielsen, Beyers

Advanced Composition and Conversation. (3) Staff

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

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

Lessing-Plays and Biography. (3) Nielsen

Schiller-Poetry, Plays and Biography. (3S) Nielsen

Die deutsche Novelle im 20. Jahrhundert. Representative stories by Thomas Mann, Hermann Hesse, Arthur Schnitzler and others. (3W) Staff

Survey of German Literature. The Middle Ages. (3F) Staff

Survey of German Literature. The 18th Century. (3W) Beyers

Survey of German Literature. The 19th Century. (3S) Staff

Goethe’s Dramas other than Faust—Goetz von Berlichingen, Egmont, Tasso, and Iphigenie. (3) Staff

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

German Lyric Poetry. A study of the major poets of Germany from the earliest times to the present. (3) Staff

Modern German Authors. (A) Thomas Mann. (B) Gerhart Hauptmann. (C) Hermann Hesse. (D) R. M. Rilke. (E) Franz Kafka. (2) Nielsen, Beyers

Elementary Greek. (6F, 5W, 5S) (Taught only on sufficient demand.) Meyer

Elementary 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) Staff

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) Staff

Selective Readings in Latin. (2F, 2W, 2S) Staff


Selective Reading in Portuguese. (1 to 2F, 1 to 2W, 1 to 2S) Porter

Elementary Russian. (5F, 5W, 5S) Ekmanis

Intermediate Russian. Second-year reading and grammar review. (2F, 3W, 3S) Ekmanis

Second-Year Conversation. Accompanies Russian 4, 5 and 6. Work will be largely in the language laboratory. Required for a Teaching Minor in Russian, recommended for all students in Second-year Russian. (2F, 2W, 2S) Ekmanis
Spanish
1. 2, 3. Elementary Spanish. (5F, 5W, 5S) Fogelberg, Porter
4. 5, 6. Intermediate Spanish. (3F, 3W, 3S) 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
120, 121, 122. Survey of Spanish-American Literature. The major literary periods and major writers of the Spanish-American countries, from the earliest time to the present. (2F, 2W, 2S) Staff
125. Survey of Spanish Literature. The early literature and the writers of the Siglo de Oro. (3F) Fogelberg
126. Survey of Spanish Literature. From the Siglo de Oro to the later 19th Century. (3) Fogelberg
127. Survey of Spanish Literature. The later 19th Century and the 20th Century. (3) 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

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
45. Introduction to Problems of Philosophy. (5S) Hayward
50. Beginning Logic. Signs, symbols and language in human behavior. Detection of common fallacies, ambiguity, vagueness. Structure of propositions; forms of valid inference; nature of deductive systems; recognition of formal fallacies. Framing and testing hypotheses in everyday life and in science; nature of evidence; right and wrong uses of statistics; probability; discovery of causes. (6F) Beyers
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. (5W) 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
160. Philosophy of Science. Assumptions and implications of scientific methods and findings; law, convention, determination, causality, truth, and value in the physical, biological and social sciences. (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-sectarian yield University credit.

Philosophical Literature Courses

34, 32, 36. Great Books and Ideas. (See English Department)

English 46. The Bible as English Literature. (See English Department)

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

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

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


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. (See English Department) Staff

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 Department) Staff

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

Honors Courses

The University sponsors honors courses supervised by a University-wide committee representing the academic deans. Enrollment is limited. You may be admitted on the recommendation of your department head, or upon direct application to one of the instructors. The courses will ordinarily be taught by two or more instructors from different academic fields. The aim is to give superior upper-division students from several departments opportunity to read, discuss, and write about significant facts and ideas, approached from a broader point of view than is ordinarily possible in advanced departmental work.

111. Senior Colloquium 1. Perspectives of Contemporary Thought. (2F) Staff

112. Senior Colloquium 2. Roots of Modern Educational Thought. (2W) Staff

113. Senior Colloquium 3. Far Eastern Thought. (2S) Staff

The used key is always bright.
Department of

Mathematics
(Mathematics and Mathematical Statistics)


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 twelve credits of upper division mathematics. It is recommended that the teaching major include Mathematics 150, and other upper division courses approved by the Department of Mathematics.

A department-approved teaching minor must include Mathematics 98 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.

All courses to be used as prerequisites must be completed with a grade of "C" or better.

Mathematics Courses

H.S. 42. Plane Geometry. (F, W; no credit) Staff
24. General Freshman Mathematics. A terminal course for students who are not specializing in mathematics, engineering, or the physical sciences. Prerequisite: A year of high school algebra and plane geometry. (3F) Staff
25. General Freshman Mathematics. Prerequisite: 24. (3W) Staff
26. General Freshman Mathematics. Prerequisite: 25. (3S) 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. (3F, W, S) Staff
44. Plane Trigonometry. Prerequisite: 35. (3S) Staff
46. Plane Trigonometry. Prerequisite: 35. (5F, W, S) Staff
50. Descriptive Astronomy. (3S) Staff
60. Mathematics of Finance. (3S) Staff
54 USU — University College

97. Analytic Geometry and Calculus. Prerequisite: 44 or 46. (5F, W, S) Staff

98. Analytic Geometry and Calculus. Prerequisite: 97. (5F, W, S) Staff

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

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

106. Modern Algebra. Prerequisite: 99. (3F) Staff

107. Modern Algebra. Prerequisite: 116. (3W) Staff

118. Modern Algebra. Prerequisite: 117. (3S) Staff

119. Theory of Equations. Prerequisite: 99. (3W) Staff

120. Modern Geometry. Prerequisite: 99. (3S) Staff

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

123. Number Theory. Prerequisite: 99. (3W) Staff

124. Foundations of Mathematics. Prerequisite: 99. (3) Staff

126. Numerical Calculus. Prerequisite: 99. (3F) Staff

127. Numerical Calculus. Prerequisite: 126. (3W) Staff

128. Numerical Calculus. Prerequisite: 127. (3S) Staff

130. Advanced Calculus. Prerequisite: 110. (3F) Staff

131. Advanced Calculus. Prerequisite: 130. (3W) Staff

132. Advanced Calculus. Prerequisite: 131. (3S) Staff

145. Vector Analysis. Prerequisite: 99. (3W) Staff

150. The Teaching of Mathematics in the Secondary Schools. (3S) Staff

153. Mathematical Readings. Prerequisite: 99. (5W) Staff

160. Determinant and Matrix Theory. Prerequisite: 99. (3) Staff

234. Topology. Prerequisite: 132. (3F) Staff

235. Topology. Prerequisite: 234. (3W) Staff

236. Topology. Prerequisite: 235. (3S) Staff

246. Tensor Analysis. Prerequisite: 145. (3) Staff

250. Graduate Seminar. (1F, 1W, 1S) Staff

254. Theory of Function. Prerequisite: 102. (3F) Staff

255. Theory of Functions. Prerequisite: 254. (3S) Staff

256. Theory of Functions. Prerequisite: 255. (3S) Staff

257. Advanced Applied Mathematics. Prerequisite: 132. (3) Staff

258. Advanced Applied Mathematics. Prerequisite: 257. (3) Staff

259. Advanced Applied Mathematics. Prerequisite: 258. (3) Staff

260. Graduate Thesis. Time and credit arranged. (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

161. Calculus of Probability. Prerequisite: 99. (5F) Staff

162. Mathematics of Statistics. Prerequisite: 99 and 161. (5W) Staff

163. Mathematics of Statistics. Prerequisite: 162. (3S) Staff

166. Sequential Analysis and Control of Quality of Output in Manufacturing. (3S) Staff

167. Statistical Reading and Reports. (3S) Staff

*Taught alternate years.
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; German, Russian, or other group electives.

**Sophomore Year:** Physics 20, 21, 22; Mathematics 98, 99, 100; German, Russian, or other group electives.

**Junior Year:** Physics 166, 167, 168, or electives; Physics 175, 176, 177 or 153, 154; Mathematics 130, 131, 132; Chemistry 104, 105, 106, 109, 110, 111 or electives; Physics 188 (taken with 120, 121, 146, 166, 167, 168, 175, 176, 177); E.E. 101 or electives.

**Senior Year:** Physics 153, 154, 160, 161, 162 or 175, 176, 177; Physics 120, 121, 130; Physics 166, 167, 168 or electives; Physics 188; Physics 131.

Students interested in entering the field of biophysics should plan their group electives so as to obtain as broad a background as possible. It is suggested that electives beyond the group requirements be taken in the biological sciences and chemistry, especially Chemistry 121, 122, 191, and Physiology 130, 131.

A minor in physics will be approved on completion of nine credits from the following upper division Physics courses: 107, 115, 122, 133, 140, 130, 131.

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, 122, 130, 131, 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 take an entrance examination administered by the department and 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. The examination schedule for this degree is as follows: Entrance examination; qualifying examination at the start of the second year of study; language examinations in German and French or Russian; comprehensive examination any time prior to one year before the final examination on the thesis. Detailed information may be obtained from the department or from the dean of the School of Graduate Studies.

Physics Courses

6. General Physics. A survey course in physics, with a laboratory. Covers fundamental physical principles with emphasis on how a problem is approached and solved in physics. (4F, W, S) Staff

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. General Physics. Mechanics, electricity, magnetism, heat, light, sound, atomic and nuclear physics for non-science majors. Prerequisite: Math 26 or Math 44 or 46. Recommended: Math. 97. Should be taken in sequence except with permission of instructor. Two lectures, three recitations and one lab per week. (5F, 5W, 5S) Staff

20, 21, 22. General Physics-Science. Mechanics, electricity, magnetism, heat, light, sound, atomic and nuclear physics for science majors and engineers. Prerequisite: Math 97. Recommended: concurrent registration in Math 98. To be taken in sequence except with permission of instructor. Two lectures, three recitations and one lab per week. (5F, 5W, 5S) Staff

31. Physical Science. Selected topics from physics to show the procedures used in physics and how they are related to other experience and thought. Intended to help satisfy physical group requirement. Three lectures, one lab. (4W, S) Staff

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

107. The Development of Ideas in Science and the Impact of These Ideas in Our Time. Prerequisite: one quarter course in physics or permission of instructor. Three lectures. (3S, 3Su) Staff

115. Demonstration Techniques in Physics. Study and use of the equipment and methods necessary for visualizing the problems studied in physical science. Students are required to build simple experiments and present them before the class. Prerequisite: At least one quarter of physics or permission of the instructor. Two lectures, one lab. (Credit arranged) Staff

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. (6S) Jensen

120, 121. Modern Physics. A study of electrons, ions, atomic structure and radiation. Prerequisite: Physics 154 or 177. (3F, 3W) Staff

122. Modern Physics. For engineering, science, and teaching majors. (3F) Staff

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

131. Nuclear Detection Methods. Designed to familiarize the student with the instruments, techniques of measurement, and elements of health safeguards used in nuclear physics. (2F, W, S) Staff

132. Nuclear Reactor Physics. Recommended for senior engineering and physics majors interested in nuclear science. Prerequisite: Physics 122 or equivalent. (3W, S) Staff

133. Nuclear Reactor Physics Laboratory. Recommended for senior engineering and physics majors interested in nuclear science. Prerequisites: Physics 122 or equivalent and Physics 131. (2W, S) Staff

140. Biophysics. Introduction to quantitative biology. The underlying physical principles involved in biophysical phenomena will be discussed. Prerequisites: Physics 17, 18, 19 or 20, 21, 22. (3W) Staff
143. Radiology. Designed to acquaint students in Medical Technology, Botany, Zoology, Pre-medicine, Pre-veterinary and Agriculture with a foundation of techniques in health physics, radiation monitoring and measuring and isotope handling. Prerequisite: One quarter of general physics. (3) 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. Thermodynamics, Kinetic Theory, Statistical Thermodynamics. (3F, 3W, 3S) 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. (3F, 3W, 3S) Staff

188. Special Problems in Experimental Physics. A laboratory course to give the advanced student experience with precision instruments and their use in physics. Must be taken with Modern Physics, Electricity and Magnetism, Optics and Acoustics. 1 to 3 per quarter (F, W, S) Staff

193, 194, 195. Seminar 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.) Staff

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 Mechanics. (3F, 3W, 3S) Staff

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

296, 297, 298. Theoretical Electricity and Magnetism. (3F, 3W, 3S) Staff

The world is a fine book but of little use to him who knows not how to read.
Department of

Speech


Office in Main 77

Bachelor of Science Degree. The Department of Speech offers training in Interpretation, Public Address, Radio and Television Broadcasting, and Clinical Speech. 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 1 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 emphasizing radio-television in the speech major, you are required during your junior and senior years to obtain one year's broadcast experience at a commercial or educational television or radio station.

If you are emphasizing clinical speech 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. If seeking certification in Clinical Speech you are exempt from the Theatre Arts requirement and one half of the Radio and Television requirement, in place of which you may elect either Speech 181 or 184.

For a composite English-Speech major, you must have the following speech courses: Public Speaking, eight credits; Interpretation, eight credits; Theatre Arts, eight credits; Speech Correction, five credits; Radio-TV, 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-TV, 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 Broadcasting, and Clinical Speech.

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, 169, 171, 173, 181, 182, 194, 185, 186, 190.

The Department of Speech in cooperation with the Department of Psychology offers a composite Master of Science degree in Psychology and Clinical Speech.

Speech Courses

1. Fundamentals of Speech. Study and training in voice, body, language, meaning and personal adjustment as applied to speaking, reading, group leadership and broadcasting. (6F, W, S) 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


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 once. 1 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, Dimbar, Harris, Kirk and other writers are studied. Taught alternate years. (5S) 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. (3) 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

101. Parliamentary Procedure. (1F) Robinson

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 Improvement in the Elementary Classroom. Designed to provide the teacher with techniques to improve the speaking skills of normal and speech handicapped children in the elementary grades. (SS) Robinson


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

*111. Psychology and Semantics of Speech. Principles of psychology which underlie speech. Personal adjustment through speech. An insight into the process of symbol use. (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

116. Speech Pathology I. Organic voice defects studied. Cleft palate speech problem considered. Some attention given to the acquisition of substitute voice such as esophageal speech. Prerequisite: Speech 167. (5W) Newman

*171. Speech Pathology II. Study of language and speech problems due to lesions of the nervous system including Cerebral Palsy, Aphasia and other dysarthrias. Prerequisite: Speech 167. (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


178, and 180. Teaching of Speech to the Deaf. The formation and development of English sounds by the analytical method, and the introduction of speech by the whole word method. Correction of speech defects in the hard-of-hearing; development of speech in the deaf child. Demonstrations and practice under expert supervision. (6Su) Staff

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. (3F) 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. (6W) 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. (3W) Hansen

+Taught alternate years.
Zoology 61

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

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. (Total limited to 6 credits) (1 to 5F, W, S) 

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) 


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

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

Department of 

Zoology

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


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; Entomology 115 or Zoology 116; 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.

Graduate Study

Master of Science Degree. The Zoology Department offers a Master of Science degree in various phases of Agricultural Entomology, Genetics, Medical Entomology, Physiology, Taxonomy, Parasitology, Mammalogy, Ornithology, and Herpetology.

Doctor of Philosophy Degree. Cooperatively with related departments, advanced study and research

*Taught alternate years.
62 USU — University College

is offered for the attainment of the degree of Doctor of Philosophy in specialized fields of Zoology, Entomology and Physiology. 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.

2. 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

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

5. Principles of Genetics. A beginning course covering the basic principles of genetics. Similar to 112 but less technical. Human genetics is emphasized. Not open to students with credit in 112. Prerequisite: At least one course in biological science. Five lectures. (3 or 5F) Linford

6. 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

7. Principles of Genetics. A beginning course in the basic principles of genetics. Illustrative material is taken from animals, plants and man. Prerequisite: Zoology 3 and 4 or Botany 24 and 25. Four lectures, one lab. (5F, W) Gardner

8. 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

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

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

11. 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) Dixon

12. Mammalogy. Introduces students to Mammalia, with particular reference to Utah and North American species. Identification, distribution, structure, habits, and economic importance are stressed. Two lectures, two labs. (4F) Dixon

13. 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

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

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


17. Organic Evolution. Critical study of the facts and theories pertaining to evolution. Prerequisite: One basic course in biological science. Zoology 102 or 112 recommended. (3W) Gardner

18. 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


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

205. Orientation for Graduate Students. Introduction to procedures in graduate study; qualifying examinations, scientific method,
selection of problem, becoming acquainted with literature, organization and writing of thesis and final examination. Required of all graduate students in Zoology, Entomology, Physiology. (1F)  

207. Theoretical Biology. A critical study of techniques and concepts in modern biological thought. Prerequisites: Zoology 107 and 231. (3F) Sanders

21. Advanced Genetics. Intensive study of heredity and variation with emphasis on current research. Prerequisite: Zoology 102 or 112. (3S) Gardner

231. Genetics and Speciation. Mechanics of heredity and variation applied to processes of evolution in plant and animal groups. Prerequisite: Zoology 102 or 112 and Wildlife Management 160 recommended. (3W) Dixon

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

236. Advanced Parasitology. Detailed study of certain parasitic protozoa and helminths, with emphasis on current research. Prerequisite: Zoology 116. (2S) Hammond

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

251. Seminar. Attendance required of all graduate students in residence in department each Fall quarter. Fundamental problems relating to current researches in zoological science are discussed by faculty, graduate students, and advanced undergraduates. (1F) Staff

262, 263. Seminar in Vertebrate Zoology. Required of all graduate students in Vertebrate Zoology each winter and spring quarter while in residence. Seniors and others interested may participate with the permission of the instructor. (1W, 1S) Dixon

272, 273. Seminar in Genetics. Required of all graduate students in Genetics each winter and spring quarter while in residence. Seniors and others interested may participate with the permission of the instructor. (1W, 1S) Gardner

282, 283. Seminar in Parasitology. Required of all graduate students in Parasitology each winter and spring quarter while in residence. Seniors and others interested may participate with permission of instructor. (1W, 1S) Hammond

*Taught alternate years.

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 language 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. Fundamental knowledge about insects—where they live, what they do, how they develop and behave; also structure, function, relationship to the environment and principles of insect control are considered. Students learn how to collect and preserve insects and to identify the major groups of these. This course is intended to serve as a foundation for other courses in Entomology and provide an introduction to the subject for those preparing to teach biology and for students in Agriculture and Wildlife Management. Also, useful for students majoring in other areas because it illustrates general principles of biology as they apply to the important insect group. (5S) Haws

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. (2S) Levin

103. Systematic Entomology. Classification of insects. Insect collection required. Prerequisite: Entomology 13. One lecture, one lab and field collecting. (3S) Davis
64 USU — University College

*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. (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) Davis

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. (5F) Haws

*112. Insect Physiology. Function of the organ systems of insects. Prerequisite: Entomology 111. Three lectures, two labs. (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 receive major attention. Prerequisite: Zoology 3 or equivalent. Two lectures, two labs. (4W) Haws

*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. (2W) Bohart

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 the 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. 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 103. (2W) Staff

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

262, 263. Seminar in Entomology. Required of all graduate students in Entomology each winter and spring quarter while in residence. Seniors in Entomology and others interested may participate with the permission of the instructor. (1W, 1S) Staff

Physiology

For a major in Physiology the following courses must be taken: Physiology 4, 121, 122, 130, 141, 151; Zoology 3, 4, 107, 112, 118, 119, 127, 128 and 131; Biochemistry 190. 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.

For a minor in Physiology the following courses are required: Physiology 4, 30, 121, 122 and 20 or 141.

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. Prerequisite: Biology 1 or an equivalent course in principles of biology. Five lectures, one lab. (5F, W, S) Bahler

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

*Taught alternate years.
30. Experimental Biology. An introduction to the basics of biological experimentation, both plant and animal. Fundamental principles of biology will be considered on a level more advanced than in Principles of Biology. Prerequisites: Principles of Biology or its equivalent or Physiology 4. Four lectures, 1 lab. (5F, 5W) Sanders

104. Advanced Human Physiology. A survey of the systems of man with emphasis on the functions of the circulatory, nervous and muscular systems. Designed primarily for students majoring in Physical Education and for students with teaching majors in the biological sciences. Prerequisite: Physiology 4 or Zoology 3 and 4. Three lectures, two labs. (5S) Sanders

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

130. Cellular Physiology. A study of physiological functions at the cellular level. As preparation, Physiology 4 or its equivalent, Chemistry 12, or 121 and 122 and Physics 17, 18 and 19 or equivalent are recommended. Three lectures, two labs. (5S) Sanders

141. Endocrinology. The glands of internal secretion, with emphasis on the hormones in reproduction. As preparation, Physiology 4, Zoology 3 and 4 and a course in organic chemistry are recommended. (3F) Biddulph

151. Comparative Physiology. A comparative study of organ function in the animal kingdom. Prerequisite: Physiology 121, 122 or 130. Five lectures. (5S) Sanders

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

241. Physiology of Reproduction. A laboratory course for studying physiology of reproduction in animals. Prerequisite: Physiology 141. Two lectures, one lab. (3W) Biddulph

261. Physiology of Response. Nerve-Muscle. A detailed physiological study of neuro muscular mechanisms of response in the animal kingdom, including contraction, conduction, synapses, and specialized organs of irritability. Prerequisites: Physiology 122 or 130. Chemistry 150, Physics 19, or equivalents. Two lectures, one lab. (3F) Sanders

271, 272, 273. Readings in Physiology. Reading and reporting of classical and current literature in Physiology. Required of all Physiology graduate students each quarter while in residence. Seniors in Physiology and others may enroll with the permission of the instructor. (1F, 1W, 1S) Staff

282, 283. Seminar in Physiology. Required of all Physiology graduate students each Winter and Spring quarter while in residence. Seniors in Physiology and others may enroll with the permission of the instructor. (1W, 1S) Staff

291. Research and Thesis. Research connected with problem undertaken for partial fulfillment of requirements for Master of Science or Ph.D. 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 requirements for admission to any school of dentistry in the United States. Suggested pre-dental schedule:

**FRESHMAN**

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 3, 4, 5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Mathematics 34, 35, 44 or 46</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>English 1, 2, 3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Air Sci., Military Sci., or P. E.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Electives (optional)</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
</tbody>
</table>

**SOPHOMORE**

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 3, 4</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Physics 17, 18, 19</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Air Sci., Military Sci., or P. E.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Electives (optional)</td>
<td>6</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

**JUNIOR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 121, 122</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 118 or 119</td>
<td>5 or 5</td>
<td>5 or 5</td>
<td>5 or 5</td>
</tr>
<tr>
<td>Electives</td>
<td>8</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

1Military Science or Air Science would be two credits each quarter.
2Students 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.
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:

**FRESHMAN**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1, 2, 3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 3, 4, 5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math. 34, 35, 44 or 46</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Air Sci., Military Sci., or P. E.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

**SOPHOMORE**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 3, 4</td>
<td>5</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Physics 17, 18, 19</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

*Military Science or Air Science would be two credits each quarter.*

**JUNIOR**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 121, 122</td>
<td>5</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Zoology 112</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Zoology 118</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chem. 115</td>
<td>-</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Electives</td>
<td>7</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

Recommended electives are Scientific Vocabulary (English 5), Psychology, Technical Writing, History, Political Science, Sociology, Economics, Philosophy, Literature, Chemistry 101, and Art and Music Appreciation. Some medical schools require 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 a 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.

*To be great, be first little.*
College of Agriculture

R. H. Walker, Dean
College of Agriculture

Curricula in Agriculture, 71
Agricultural Science, 71
Agricultural Business, 71
General Agriculture, 71
Agricultural Education, 72
Two-Year Program in Agriculture, 72

Department of Agricultural Economics, 73

Department of Agricultural Education, 125
(In College of Education)

Department of Agronomy, 76
Department of Animal Husbandry, 80
Department of Applied Statistics, 83
Department of Botany and Plant Pathology, 84
Department of Dairy Industry, 86
Department of Horticulture, 89
Department of Poultry Husbandry, 93
Department of Veterinary Science, 94

Agricultural Experiment Station, 281
Cooperative Extension Service, 289

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 dynamic, rapidly changing industry. There are few fields of work that can offer you such interesting and challenging opportunities. Agriculture includes much more than farming or producing food and fibre. It includes all the occupations connected with the production, processing and distribution of farm products.

Agriculture is the nation's largest industry. Of the 65 million people employed in the United States, about 26 million (40 percent) work in agriculture: nearly eight million (12 percent) work on farms, seven million produce for and service farmers, and 11 million process and distribute farm products. In addition, about a half million scientists serve agriculture directly or indirectly. The agricultural industry is the biggest buyer, seller and borrower in the U. S.—and it has the biggest investment. It uses more steel, rubber, petroleum, trucks, tractors and more electricity than any other industry.

Today's agriculture offers you unlimited opportunities. But it is highly competitive and to be successful you must be well trained and be able to produce and manage efficiently.


The programs of study of the College of Agriculture are designed to provide the training needed to enable you to:

- Become a successful farmer or rancher.
- 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.
- Become a teacher of agriculture in high school or college, a county agent, or an extension specialist in a land grant college.
- Become a research scientist in industry, in an agricultural experiment station, or in a government agency.
- Make a career in agricultural communications: radio, television, news, publications, advertising agencies, photography.
- Become a conservation specialist to conserve and rebuild our natural resources.
- Enter public and private services: U. S. Government, foreign agricultural service, city, county, and regional planning, agricultural consultant work, private business.
- Become a leader in the community in which you live so you can intelligently serve your fellow-
men and fulfill your obligations as a citizen of a free world.

Utah State University, Utah's land grant institution, is equipped to help you qualify for these special positions as well as to give you a broad general education in the basic sciences and in the humanities. Its staff and facilities provide an opportunity for you to prepare for an interesting and profitable career.

Staff members of the Agricultural Experiment Station are devising better methods of feeding and cropping and are developing more valuable strains of fruits, crops, and livestock, and more remunerative systems of marketing agricultural products. These activities are studied by the student first hand, and student employment enables many to take active part in the research work of the Experiment Station. This arrangement gives a clear insight into scientific methods and valuable practical experience. 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 and teachers or investigators, and have become leaders in their chosen work.

Facilities and Equipment

The new Agricultural Science Building houses 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, Horticulture, and Agricultural Education 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 one-half mile north of the campus. Facilities are available for housing of livestock and for animal research work. These facilities include equipment for the study of animal metabolism, physiology, and nutrition.

The Dairy Farm is one mile north of the campus. Here are modern facilities for housing dairy cattle and for research in dairy cattle management, nutrition and breeding. Milk is transported from the dairy farm to the processing plant on the campus by a large refrigerated tank truck.

The Poultry Farm is one mile north of the campus, adjacent to the Dairy Farm. The poultry plant is well equipped for instruction and research in poultry husbandry. Extensive investigations are under way on methods of feeding, housing, and disease control, to obtain the most economical production.

The Turkey Farm is one mile north and east of the campus. Research in turkey breeding and management is conducted at this farm.

The Veterinary Science Building has well equipped laboratories, isolation rooms, and facilities for teaching and research in animal and poultry physiology, hygiene, and disease. A veterinary clinic is maintained for diagnostic service for livestock and poultry producers.
Curricula in Agriculture

You may work toward the Bachelor of Science degree in one of four divisions or areas of interest as follows:

(1) **Agricultural Science**, which will prepare you for graduate work in one of the basic agricultural sciences and for a career in scientific or technical agriculture. You may select between Biological Science or Applied Science (Animal Science, Plant Science, Applied Statistics).

(2) **Agricultural Business**, which will give you considerable training in the business phases of agriculture.

(3) **General Agriculture**, which will give you a broad, general training in scientific and practical agriculture and prepare you for general farming, agricultural service work, etc.

(4) **Agricultural Education**, which will prepare you to become an agricultural teacher.

Minimum requirements for the B.S. degree under each of these divisions are listed below. In addition you must fill University requirements and the requirements of the department in which you major.

### Agricultural Science

**a) Biological Science**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exact Science$^1$</td>
<td>30</td>
</tr>
<tr>
<td>Biological Science$^2$</td>
<td>15</td>
</tr>
<tr>
<td>Social Science</td>
<td>8</td>
</tr>
<tr>
<td>Language and Arts</td>
<td>8</td>
</tr>
<tr>
<td>Basic Communications</td>
<td>9</td>
</tr>
<tr>
<td>P.E. or M.S.</td>
<td>6</td>
</tr>
</tbody>
</table>

Meet all departmental requirements for major, and University requirements for graduation.

For many students the 30-hour requirement in exact science is not enough, but in fields like taxonomy, some courses other than exact science are more helpful. Your department decides what additional courses are required.


<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exact Science$^3$</td>
<td>45</td>
</tr>
<tr>
<td>Biological Science$^2$</td>
<td>15</td>
</tr>
<tr>
<td>Language &amp; Arts</td>
<td>8</td>
</tr>
<tr>
<td>Social Science</td>
<td>8</td>
</tr>
<tr>
<td>Basic Communications</td>
<td>9</td>
</tr>
<tr>
<td>P.E. or M.S.</td>
<td>6</td>
</tr>
</tbody>
</table>

Meet all departmental requirements for major, and University requirements for graduation.

### Agricultural Business

**Freshman and Sophomore Years**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exact Science$^3$</td>
<td>24</td>
</tr>
<tr>
<td>Biology$^4$</td>
<td>10</td>
</tr>
<tr>
<td>Social Science</td>
<td>32</td>
</tr>
<tr>
<td>Language &amp; Arts</td>
<td>8</td>
</tr>
<tr>
<td>M.S. or P.E.</td>
<td>6</td>
</tr>
<tr>
<td>Basic Communications</td>
<td>9</td>
</tr>
<tr>
<td>Electives</td>
<td>7</td>
</tr>
</tbody>
</table>

Meet all departmental requirements for major, and University requirements for graduation.

$^1$Exact Science requirements must be filled from the following courses: Math 35, 44, 46, 97, 98, 99; Physics 17, 18, 19 or 20 and 21 and 22; Chemistry 3, 4, 5, 12, 17, 18 (under exceptional circumstances 10 and 11 may be authorized by the head of the major department), Geology 3, and any upper division courses authorized by the student's major department.

$^2$Biological Science requirements must be filled from the following courses: Botany 24, 25; Zoology 3, 4, 112; Bacteriology 70, 71.

### General Agriculture

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exact Science$^3$</td>
<td>24</td>
</tr>
<tr>
<td>Biological Science$^3$</td>
<td>15</td>
</tr>
</tbody>
</table>

$^3$In addition to the courses listed above Zoology 1 and Physiology 4 will be allowed.

$^4$In addition to the courses listed above Math. 24, 25, 26 and Geology 31, 32, 33 will be allowed.

### Curricula in Agriculture 71
In addition, you must take Agronomy 56, Agricultural Economics 71, 72, & 73, (nine hours), or the equivalent, and a minimum of one three-credit course in each of two departments in applied animal science and one three-credit course in each of two departments in applied plant science. Any deviations from these requirements must have the approval of the Dean.

Agricultural Education - four years

<table>
<thead>
<tr>
<th>Hours</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Biological Science(^1)</td>
</tr>
<tr>
<td>23</td>
<td>Exact Science(^2)</td>
</tr>
<tr>
<td>84</td>
<td>Agriculture</td>
</tr>
<tr>
<td>35</td>
<td>Education</td>
</tr>
<tr>
<td>8</td>
<td>Language &amp; Arts</td>
</tr>
<tr>
<td>10</td>
<td>Social Science</td>
</tr>
<tr>
<td>9</td>
<td>Basic Communications</td>
</tr>
<tr>
<td>6</td>
<td>M.S. or P.E.</td>
</tr>
</tbody>
</table>

Meet all departmental requirements for major and University requirements for graduation.

\(^1\)Biological Science requirements must be filled from the following courses: Botany 24, 25; Zoology 3, 4; Bacteriology 70, 71; Zoology 12.

\(^2\)In addition to the courses listed above, Math. 24, 25 or 26 and Geology 31, 32, 33 will be allowed.

Two-Year Program in Agriculture

You may take a two-year course in practical agriculture if you do not wish to take more than two years of college work. You 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, you must take six credits in the groups in which you do not major. For example, if you major in animal science you must complete, in addition to 20 credits in your major field, six credits in plant science, six credits in agricultural economics and six credits in agricultural engineering. You must also take the following courses: Basic Communications, nine credits; Biology, five credits; Physical Science, five credits; and Social Science, five credits.

You may also take the following courses: Agricultural Economics 71, 72, 73; Agricultural Engineering 1, 14, 15; Agronomy 7, 8, 56; Animal Husbandry 1, 10; Dairy Husbandry 2, 6; Horticulture 1, 2, 4; Landscape Architecture 3; Poultry Husbandry 1; Veterinary Science 20; Irrigation and Drainage 10.

You must complete 96 credits to obtain a certificate.

1. General Agriculture. Required of all freshman in agriculture. A course to assist freshmen in adjustment to college life and acquaint them with what is offered in Agriculture. (IF)
Agricultural Economics is a study of economics or business principles and problems involved in producing and marketing agricultural products. To be a well trained Agricultural Economist you become familiar with major scientific principles and practices of crop and livestock production and principles of economics and business practices. With this training a wide range of employment will be open to you. This will include the successful operation of your own farm, professional farm manager, teacher, research and extension worker at either state or federal level, foreign service specialist, or owner-operator or employee of any business that buys, sells, or processes agricultural products or provides supplies or services for agriculture.

Bachelor of Science Degree. If you plan to pursue a course of training that ends with a B.S. degree you should enter the Curriculum for General Agriculture for the freshman and sophomore years, then complete the course listed below for General Agriculture in Agricultural Economics.

If you plan to pursue a course of training that leads beyond a B.S. degree, you should enter the curriculum in Agricultural Business and Economic Science for the four-year course listed below. Equivalent and substitute classes are acceptable if you are a transfer student.

Graduate Study

Master of Science Degree. You will find excellent facilities in the Department for graduate studies in general agricultural business, agricultural economics, farm management, land economics, agricultural finance, agricultural marketing and agricultural prices. Research in these areas is conducted by the Department staff and the federal collaborators, with the assistance of graduate students. All upper division courses in Agricultural Economics may be used for graduate credit in an Agricultural Economics major.

Agricultural Economics 71, 72, and 73 or their equivalents are prerequisite to all other courses in Agricultural Economics.

Suggested Course of Study for Junior and Senior Years in General Agriculture in Agricultural Economics.

JUNIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ. 51</td>
<td>5</td>
</tr>
<tr>
<td>An. Sc.</td>
<td>5</td>
</tr>
<tr>
<td>Ag. Eng. 110</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>
### College of Agriculture

#### Course (Ag. Econ. 74)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop Electives</td>
<td></td>
</tr>
<tr>
<td>Course (Ag. Econ. 163)</td>
<td></td>
</tr>
<tr>
<td>Vet. Sc. 120</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

#### Senior Year

**Fall**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag. Econ. 180</td>
<td>3</td>
</tr>
<tr>
<td>Ag. Econ. 150</td>
<td>3</td>
</tr>
<tr>
<td>Ag. Econ. 235</td>
<td>0</td>
</tr>
<tr>
<td>Crop Sc.</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

**Winter**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag. Econ. 155</td>
<td>3</td>
</tr>
<tr>
<td>Ag. Econ. 112</td>
<td>3</td>
</tr>
<tr>
<td>Ag. Econ. 150</td>
<td>3</td>
</tr>
<tr>
<td>Ag. Econ. 236</td>
<td>0</td>
</tr>
<tr>
<td>Econ. 174</td>
<td>3</td>
</tr>
<tr>
<td>An. Sc.</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

**Spring**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ. 150</td>
<td>3</td>
</tr>
<tr>
<td>Ag. Econ. 150</td>
<td>1</td>
</tr>
<tr>
<td>Ag. Econ. 237</td>
<td>0</td>
</tr>
<tr>
<td>Crop Sc.</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

During your Junior and Senior years you complete the following minimum requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Economics</td>
<td>23</td>
</tr>
<tr>
<td>Economics</td>
<td>14</td>
</tr>
<tr>
<td>Business Administration</td>
<td>10</td>
</tr>
<tr>
<td>Agricultural Production</td>
<td>10</td>
</tr>
<tr>
<td>Department Prescribed Courses</td>
<td>15</td>
</tr>
<tr>
<td>Electives</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>96</td>
</tr>
</tbody>
</table>

**Suggested Four-Year Curriculum**

**Agricultural Business and Economic Science**

### Freshman

**Fall**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.C. 1</td>
<td>3</td>
</tr>
<tr>
<td>M.S. or P.E.</td>
<td>1 or 2</td>
</tr>
<tr>
<td>Biology 1</td>
<td>5</td>
</tr>
<tr>
<td>Math. 24</td>
<td>3</td>
</tr>
<tr>
<td>Soc. 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 or 18</td>
</tr>
</tbody>
</table>

**Winter**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.C. 2</td>
<td>3</td>
</tr>
<tr>
<td>M.S. or P.E.</td>
<td>1 or 2</td>
</tr>
<tr>
<td>Physiology 4</td>
<td>5</td>
</tr>
<tr>
<td>Math. 25</td>
<td>3</td>
</tr>
<tr>
<td>Economics 51</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>17 or 18</td>
</tr>
</tbody>
</table>

**Spring**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.C. 3</td>
<td>3</td>
</tr>
<tr>
<td>M.S. or P.E.</td>
<td>1 or 2</td>
</tr>
<tr>
<td>Math. 26</td>
<td>3</td>
</tr>
<tr>
<td>Pol. Sc. 10</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>17 or 18</td>
</tr>
</tbody>
</table>

1Exact Science requirements must be filled from the following courses or their equivalent: Math 24, 25, 26, 35, 44, 46, 97, 98, or 99; Physics 17, 18, and 19 or 20, 21, 22; Chemistry 3, 4, or 5 or 10, 11, and 12; Geology 3 or 31, 32 and 33.

2Biological Science requirements must be filled from the following courses: Botany 24, 25; Zoology 3, 4, 112; Bacteriology 76, 71; General Biology 1, and Physiology 4.

3Social Science requirements may be filled from any lower division courses in Agricultural Economics, Business Administration, Economics, History, Political Science, Psychology, or Sociology. Some course work must be taken in a minimum of four departments.
### SOPHOMORE

#### Fall

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.S. or P.E.</td>
<td>1 or 2</td>
</tr>
<tr>
<td>Agr. Econ. 71</td>
<td>3</td>
</tr>
<tr>
<td>Speech</td>
<td>3</td>
</tr>
<tr>
<td>Exact Sc.</td>
<td>3 - 5</td>
</tr>
<tr>
<td>B.A. 20</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>3 - 0</td>
</tr>
</tbody>
</table>

**Winter**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.S. or P.E.</td>
<td>1 or 2</td>
</tr>
<tr>
<td>Agr. Econ. 72</td>
<td>3</td>
</tr>
<tr>
<td>Lit.</td>
<td>5</td>
</tr>
<tr>
<td>Exact Sc.</td>
<td>3 - 5</td>
</tr>
<tr>
<td>Agr. Econ. 62</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>5 - 2</td>
</tr>
</tbody>
</table>

**Spring**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.S. or P.E.</td>
<td>1 or 2</td>
</tr>
<tr>
<td>Agr. Econ. 73</td>
<td>3</td>
</tr>
<tr>
<td>Exact Sc.</td>
<td>3 - 5</td>
</tr>
<tr>
<td>Agr. Econ. 62</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>5 - 2</td>
</tr>
</tbody>
</table>

### JUNIOR

#### Fall

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.A. 100</td>
<td>4</td>
</tr>
<tr>
<td>Econ. 52</td>
<td>5</td>
</tr>
<tr>
<td>Agr. 2</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
</tr>
</tbody>
</table>

**Winter**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agr. Econ. 102</td>
<td>3</td>
</tr>
<tr>
<td>Agr. Econ. 105</td>
<td>3</td>
</tr>
<tr>
<td>Agr. 2</td>
<td>3</td>
</tr>
<tr>
<td>B.A. 147</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
</tr>
</tbody>
</table>

**Spring**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agr. Econ. 121</td>
<td>5</td>
</tr>
<tr>
<td>Agr. Econ. 163</td>
<td>3</td>
</tr>
<tr>
<td>B.A. 148</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

### SENIOR

#### Fall

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agr. Econ. 150</td>
<td>1</td>
</tr>
<tr>
<td>Agr. Econ. 155</td>
<td>3</td>
</tr>
<tr>
<td>Agr. Econ. 236</td>
<td>0</td>
</tr>
<tr>
<td>Economics 107</td>
<td>3</td>
</tr>
<tr>
<td>Agr. 2</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

#### Winter

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag. Econ. 150</td>
<td>1</td>
</tr>
<tr>
<td>Economics 150</td>
<td>3</td>
</tr>
<tr>
<td>Ag. Econ. 237</td>
<td>0</td>
</tr>
<tr>
<td>Economics 108</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

#### Spring

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag. Econ. 150</td>
<td>1</td>
</tr>
<tr>
<td>Economics 150</td>
<td>3</td>
</tr>
<tr>
<td>Ag. Econ. 237</td>
<td>0</td>
</tr>
<tr>
<td>Economics 108</td>
<td>3</td>
</tr>
<tr>
<td>Agr. 2</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

### Ag Economics Courses

- **71, 72, 73 Fundamentals of Agricultural Economics.** A basic introduction to the field and principles of agricultural economics. (3F, 3W, 8S) Staff

- **102. Intermediate Farm Management.** Principles and practices associated with the successful operation of farms. Three lectures. (3W) Morrison

- **105. Agricultural Credit.** Principles of agricultural credit. Emphasis on problems and methods of financing agriculture. (3W) 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. (3S) Strong

- **112. Agricultural Cooperatives.** Principles of cooperation; organization, operation and management of cooperative sales, purchasing, and service associations. (3W) Christensen

- **116. Livestock Economics.** Application of farm management and agricultural marketing principles to the economic production of livestock and livestock products. (3F) Davis

- **121, 122. Agricultural Statistics and Research Techniques.** An introduction to the research process in solving problems in Agricultural Economics. Emphasis will be placed on basic techniques used in collecting, analyzing and presenting research data. (4F, W) Staff

- Either Math. 46, 97, and 98 or Physical Science 31, 32 and 33.

- A total of 10 hours are required in Agricultural Production courses. The choice will be determined by your individual interests and needs.

*Taught alternate years.*
76 College of Agriculture

150. Special Readings. Directed readings on selected problems for undergraduates. Credit arranged. (F, W, S, Su) 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. (3W) Morrison

163. Intermediate Agricultural Marketing. Principles and functions of marketing and their application to the marketing of agricultural products. (3S) Christensen

180. Government and Agriculture. A study of government in relation to selected economic problems, past and present, in agriculture. Emphasis is 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. (3F) Davis

202. Advanced Farm Management. Economic principles and their application to specific production functions in agriculture. (5F) Roberts


214. Thesis. Credit arranged. (F, W, S, Su) 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) Roberts

250. Special Problems. Directed study on selected problems for graduates. Credit arranged. (F, W, S, Su) 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) Staff

*206. Taught alternate years.

Department of

Agronomy

(Agronomy, Crop Science, Soil Science)


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 inter-relations of plants, soil, precipitation, and irrigation water in production of maximum crop yields under a variety of conditions. Three types of majors for the bachelor’s degree are offered: Agronomy, Crop Science, and Soil Science.

 Majors must have a grade point of 2.5 or better in all Agronomy courses. Any Agronomy course with "D" grade must be repeated. Transfer students are required to take at least 15 credits of the major in residence at Utah State University.

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 Department, in cooperation 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 upper division courses are acceptable for graduate credit toward the Master of Science degree in Agronomy: 109, 110, 120, 155, 165; in addition, for majors in Crops, 107.

Doctor of Philosophy Degree. The Agronomy Department, in cooperation with related departments, offers 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 School of Graduate Studies.

Agronomy

As a major in Agronomy you are prepared for positions in the Agricultural Extension Service; as an agronomist, farm planner, conservationist, and soil scientist in the United States Civil Service; or as field man or farm manager in the commercial field.

In addition to the general University group requirements you should take Ag. Econ. 71, 72, and 73 (nine hours, or the equivalent); Ag. Eng. 10 or 110; Agron. (Crops) 7, 8, 103, 109, 112, 118, and 120; Agron. (Soils) 106, 107, 111, and 155 or 165; Appl. Stat. 131, and 132; Bact. 70 and 71; Bot. 24, 25, 30, 120, and 130; Ent. 108; Exact Science, 45 hours to be filled from the following courses: Math 35, 44 or 46, 97, 98, 99; Physics 17, 18, 19, or 20, 21, and 22; Chemistry 3, 4, 5, 12, 17, 18 (under exceptional circumstances 10 and 11 may be authorized by the head of the department); Geol. 3; and any upper division Math., Chem., Physics, or Geol. courses authorized by your major department; and Zool. 112.

Crop Science

As a major in Crop Science you 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. If you have special aptitudes in the fundamental sciences and are interested in plant sciences you will find unlimited opportunities in this field.

In addition to the general University group requirements you should take Ag. Eng. 10 or 110; Agron. (Crops) 7, 8, 103, 109, 112, 118, and 120; Agron. (Soils) 106, 107, 111, and 155 or 165; Appl. Stat. 131, and 132; Bact. 70 and 71; Bot. 24, 25, 30, 120, and 130; Ent. 108; Exact Science, 45 hours to be filled from the following courses: Math 35, 44 or 46, 97, 98, 99; Physics 17, 18, 19, or 20, 21, and 22; Chemistry 3, 4, 5, 12, 17, 18 (under exceptional circumstances 10 and 11 may be authorized by the head of the department); Geol. 3; and any upper division Math., Chem., Physics, or Geol. courses authorized by your major department; and Zool. 112.

Crops Courses

7. Grain Crops. The classification, history, and cultural methods involved in the production of grain crops. Two lectures, one lab. (8S) Staff

8. Root and Miscellaneous Crops. Cultural methods, market grades and commercial possibilities of sugar beets, potatoes, tobacco, and other crops are studied. (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. Prerequisite: Bot. 24. (4 F, S) Allred


112. Field Crops Seminar. Review and discussion of Current Agronomic problems, practices, and available employment. Required of all seniors in department. One lecture. (1F)

118. Weeds. Identification of weeds, the weed problems in agriculture, and methods of control. An assessment is made for field trips. Three lectures, one lab. (4F) Tingey

120. Field Crop Seed Production. Methods, problems, and commercial possibilities of field crop seed production in the Intermountain West. Prerequisite: Bot. 24. (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 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. (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. (3W, S) McAllister

213. Crop Seminar. Current scientific topics in farm crops. Required of all graduates majors. One conference weekly. (1F, 1W, 1S)

Soil Science

As a major in Technical Soils you are prepared for graduate work or employment in research, soil testing, land classification, and soil management. You will find real opportunities in this major if you achieve high scholastic standing and have a marked ability in the fundamental sciences.

In addition to general University group requirements you should take Ag. Eng. 10 or 110; Agron. (Crops) 7 or 8, 103, 112, Agron. (Soils) 106, 107, 111, 114, 155 and 165; Appl. Stat. 131 and 132; Bact. 70, and 71; Bot. 24, 25, and 120; Chem. 3, 4, 5, and 17, and 18 or 115; Geol. 3; Math. through 99; Physics 17, 18 and 19, or 20, 21 and 22; plus five hours of either Organic Chemistry or advanced Physics. A minimum of 63 hours in mathematics, physics and chemistry are necessary to meet the minimum approved by the Soil Science Society of America.

Soils Courses

56. Introductory Soils. A terminal survey course. A brief study of soil formation, classification, fertility and management. Three lectures, one lab. (4W, 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. (1F, S) 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 & 106 and 58.) Four lectures, one lab. (5S) Miller

106. Fundamentals of Soil Science. A study of the composition and reactions of mineral soils: physical and chemical soil properties. A beginning course for students in Agricultural sciences. Three lectures, one lab. For students in applied science, should be taken in a sequence with Agron. 107. Prerequisites: Math. 35 and Inorganic Chemistry. (4F) Miller

107. Fertility and Management of Irrigated Soils. Application of soil principles to management practices of soils including water-soil relations, organic matter maintenance, fertilizers, and reclamation and management of saline soils. Prerequisite: Agron. 58, or 106, or approval of the instructor. (5F or W) Staff

110. Soil Microbiology. See Bacteriology 110.

111. Soil Seminar. Review and discussion of current soil problems and literature. Required of all seniors in department. (1F, or W) Staff

114. Soil Survey and Conservation. A study of soil forming factors and of soil classification, survey, and conservation. Prerequisite: Agron. 106 or 58 and 3 credits in field crop production or range management. Two lectures, three labs. (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. 106 or 58. For seniors. Two lectures, one lab. (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. Prerequisites: Agron. 106 or 58, General Physics or Chemistry. (3F) Taylor

212. Seminar. Review of current literature in soil science. Required of all graduate majors. (1F, 1W, 1S) 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. Prerequisite: Agronomy 165. (3S) 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. (2F, or W) 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. (3F) Miller

*224. Soil Chemistry. Composition and reactions of soil colloids. (3S) Smith


266. Physical Analysis of Soils. A laboratory course in Soil Physics. Prerequisite: Agron. 165. (2F) Taylor

Special Courses

116. Dry Farming. Principles of dry farming from practical and scientific standpoints; a survey of agricultural work in the Great Plains and the mountain regions; and analysis of the possibilities in typical climatic areas and on important soil types. Prerequisites: Agron. 7 and 106. (2S) McAllister

150. Special Problems. Conferences or laboratory investigations. Subject and credit arranged. Staff

218. Special Problems. Crop production, crop breeding, soil fertility, or other phases of agronomic work. You review literature on the problem and conduct experiments. Credit arranged. (F, W, S, Su) Staff

230. Research and Thesis. Outlining and conducting research in soils or farm crops and preparation of thesis. Credit arranged. (F, W, S, Su) Staff

*Taught alternate years.

As a moth gnaws at a garment, so does envy consume a man.
Office in Animal Industry 307

Courses in Animal Husbandry are designed to train you to solve problems encountered in producing beef cattle, sheep, and swine.

As a major in Animal Husbandry you may obtain a Bachelor of Science degree in either General Animal Husbandry or an Applied Science Program of study. A two-year certificate course in Animal Husbandry is also offered.

A major in General Animal Husbandry will prepare you to be a livestock operator, a ranch manager, a county agent, or to take a position related to livestock raising with various other state and federal agencies.

Suggested Course of Study

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRESHMAN</td>
<td></td>
</tr>
<tr>
<td>A.H. 2, 50</td>
<td>8</td>
</tr>
<tr>
<td>Math. 24, 25, 26 or 34, 35 and 44</td>
<td>9 or 11</td>
</tr>
<tr>
<td>M.S. or P.E.</td>
<td>3</td>
</tr>
<tr>
<td>English 1, 2, and 3</td>
<td>9</td>
</tr>
<tr>
<td>Ag. Econ. 71, 72 and 73</td>
<td>9</td>
</tr>
<tr>
<td>P.S. 10</td>
<td>5</td>
</tr>
<tr>
<td>Zool. 3</td>
<td>5</td>
</tr>
<tr>
<td>Agric. 1</td>
<td>1</td>
</tr>
<tr>
<td>Electives 4 or 2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOPHOMORE</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.H. 41, 42</td>
<td>2</td>
</tr>
<tr>
<td>Chem. 10, 11 and 12 or 3, 4 and 12</td>
<td>15</td>
</tr>
<tr>
<td>M.S. or P.E.</td>
<td>3</td>
</tr>
<tr>
<td>Botany 24, Zool. 4 or Bot. 25, Bot 30</td>
<td>15</td>
</tr>
<tr>
<td>V.S. 20</td>
<td>5</td>
</tr>
<tr>
<td>Agron. 56</td>
<td>4</td>
</tr>
<tr>
<td>Lang. and Arts</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>JUNIOR</th>
<th>29</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochem.</td>
<td>5</td>
</tr>
<tr>
<td>Zool. 112</td>
<td>5</td>
</tr>
<tr>
<td>Dairy or Poultry</td>
<td>3</td>
</tr>
<tr>
<td>Agron. 103</td>
<td>4</td>
</tr>
<tr>
<td>Irrigation and Drainage 10 or 110</td>
<td>3</td>
</tr>
<tr>
<td>Surveying 81</td>
<td>3</td>
</tr>
<tr>
<td>Lang. and Arts</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SENIOR</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.H. 160, 175</td>
<td>6</td>
</tr>
<tr>
<td>Entomology 108</td>
<td>5</td>
</tr>
<tr>
<td>Ag. Educ. 151</td>
<td>3</td>
</tr>
<tr>
<td>Business 20 or 147, 63</td>
<td>8</td>
</tr>
<tr>
<td>V.S. 120, 150</td>
<td>7</td>
</tr>
<tr>
<td>Range Mgt. 160</td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td>10</td>
</tr>
</tbody>
</table>

Applied Science in Animal Husbandry. Majoring in this field you will be prepared for graduate work or technical employment in research. If you have high scholastic standing and marked ability in the fundamental sciences you find excellent employment opportunities in this major.

Applied Statistics Curriculum

During the freshman and sophomore year, you should complete the following requirements: Exact sciences, a minimum of 45 hours to be selected from Math. 35, 44, 46, 97, 98, 99; Physics 17, 18, 19 or 20, 21, 22; Chemistry 3, 4, 5, 12,
17, 18; Biological sciences, a minimum of 15 hours to be selected from Botany 24, 25; Zoology 3, 4; Bacteriology 70, 71; Language and Arts, eight hours to fill the University group requirement; Social Sciences, eight hours to fill the University group requirement; English 1, 2 and 3, nine hours; P.E. or M.S., six hours.

In addition, the following courses should be completed: Agric. Econ. 163, 180; Agron. 56, 103, An. Hus. 2 or 165, 50, 41, 42, 150, 151, 155, 160; Chemistry 190 or 191; V. S. 20, Zool. 112.

If you specialize in nutrition you should also complete either Physiology 121 and 122 or Chem. 121, 122 in addition to Chem. 3, 4, 5, 17 and 18.

Two-year Program in Animal Husbandry

A two-year practical course is available to train you for efficient livestock production. If you do not wish to take more than two years of University work, the suggested course of study is as follows:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.H. 2; 10; 41, 42 and 50 or 120;</td>
<td>110, 125</td>
</tr>
<tr>
<td>V.S. 120</td>
<td>4</td>
</tr>
<tr>
<td>Agron. 56, 103 or Rge. Mgt. 160.</td>
<td>8</td>
</tr>
<tr>
<td>Ag. Econ. 71, 72, 73</td>
<td>9</td>
</tr>
<tr>
<td>Ag. Eng. 1, 10, 102, 103</td>
<td>19</td>
</tr>
<tr>
<td>Welding 91</td>
<td>5</td>
</tr>
<tr>
<td>English 1, 2, 3</td>
<td>9</td>
</tr>
<tr>
<td>Math. 34</td>
<td>3</td>
</tr>
<tr>
<td>P.S. 10, Soc. 10 or 70</td>
<td>10</td>
</tr>
<tr>
<td>P.E. and Electives</td>
<td>13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>98</strong></td>
</tr>
</tbody>
</table>

Graduate Study

The Animal Husbandry Department offers 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 Nutrition — Biochemistry combination (See Graduate School: Nutrition and Biochemistry).

**Doctor of Philosophy Degree.** The Animal Husbandry Department in cooperation with related departments offers the Doctor of Philosophy degree. (See also Graduate School: Nutrition and Biochemistry.) Detailed information may be obtained from the Department or from the Dean of the Graduate School.

Animal Husbandry Courses

1. **Fundamentals of Animal Husbandry.** Livestock 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) Foote

2. **Animal Husbandry Laboratory.** Exercises in judging, marketing classification and practical problems. Should be taken at the same time as A.H. 1. Two labs. (2F) Madsen

10. **Feeds and Feeding.** Differences in digestive tracts of farm animals; physiology of digestion and feed utilization; composition of feeds; the balancing or rations; and feeding of farm animals. Four lectures, one lab. (5W) Foote

41 and 42. **Livestock Practicum.** Development of skills in the feeding, care, fitting and showing of beef cattle, sheep and swine. Two labs. (1W, 1S) Staff

50. **Current Developments in Animal Husbandry.** Review and discussion of recent developments in the field of Animal Husbandry. Required of all students during the first quarter in attendance. (May be repeated. Two credits required for majors). (1F) 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. (3S) Staff

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) Bennett
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. (3S) Matthews

150. Animal Nutrition. Basic principles of the metabolism of nutrients and nutrient requirements of farm animals; range forage deficiencies and toxicities; and a consideration of investigational methods. Prerequisite: Chemistry 190, or equivalent. (4W) Harris

151. Applied Animal Nutrition. Compositions of feeds and adaptability to different species of farm animals; nutrient deficiencies and their correction through feeding, feeding systems for farm animals and feed formulation. Prerequisite: A.H. 150. (3S) Butcher

155. Animal Breeding. Application of genetics to improvement of farm animals. Breeding systems, inheritance problems, fertility and sterility in larger farm animals. 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. Prerequisite or concurrent registration: A.H. 151, 155. (3S) 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) Matthews

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. 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 is emphasized. (3W) Matthews

201. Problems in Animal Breeding. Readings, discussions and lectures concerning genetic facts and theories as related to animal breeding. Prerequisite: A.H. 155. (3W) Harris

210. Techniques in Nutrition Research. An original project is completed with the primary objective being to orient you on how to plan, conduct, and summarize research in animal nutrition. Prerequisite: A.H. 150. (2-6F, W or S) 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) Madsen

230. Animal Breeding Research. You outline a problem, make a critical review of pertinent literature, collect, analyze necessary data, and prepare a report of your 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) 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. (May be repeated.) (1F, 1W, 1S) Staff

270. Nutrition and Biochemistry Seminar. Reports and discussion of topics of current interest and importance by students, staff, and guest speakers. Philosophy of research and technical information are included. Area of coverage rotates each quarter. Course enrollment may repeat each quarter. (1F, 1W, 1S) Staff

*Taught alternate years.
Department of Applied Statistics

ASSOCIATE PROFESSOR R. L. Hurst, HEAD; ASSISTANT PROFESSOR K. H. Lu.

Office in Agricultural Science 19

The Department of Applied Statistics offers service-course in statistical methodology to all departments of the University.

If you major in Applied statistics you will be prepared for graduate work or employment in the research programs of Agricultural Experiment Stations, Colleges, Universities, and Industry.

As a major in Applied Statistics you are expected to complete Applied Statistics 131, 132, 141, 215, 156, 220 and at least 13 credit hours in the division of Mathematical Statistics. You should take a minor in one of the applied fields.


Suggested four-year curriculum

<table>
<thead>
<tr>
<th>Freshman and Sophomore years</th>
<th>Credit hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Communications (1, 2, 3)</td>
<td>9</td>
</tr>
<tr>
<td>Mathematics (35, 46, 97, 98, 99)</td>
<td>25</td>
</tr>
<tr>
<td>Biological Science (Bot. 24, 25); Zool. 3, 4; Bact. 10 or 70, 71)</td>
<td>15</td>
</tr>
<tr>
<td>Chemistry (3, 4, 5)</td>
<td>15</td>
</tr>
<tr>
<td>Language¹ (Russian 1, 2, 3)</td>
<td>15</td>
</tr>
<tr>
<td>German 1, 2, 3; French 1, 2, 3</td>
<td>15</td>
</tr>
<tr>
<td>M.E. or P.E.</td>
<td>6</td>
</tr>
<tr>
<td>Economics (51)</td>
<td>5</td>
</tr>
<tr>
<td>Political Science (1 or 10)</td>
<td>5</td>
</tr>
<tr>
<td>Electives²</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior and Senior years</th>
<th>Credit hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics (17, 18, 19 or 20, 21, 22)</td>
<td>15</td>
</tr>
<tr>
<td>Applied Statistics (131, 132, 141, 156, 215, 220)</td>
<td>21</td>
</tr>
<tr>
<td>Mathematical Statistics</td>
<td>13</td>
</tr>
<tr>
<td>Electives²</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
</tr>
</tbody>
</table>

Applied Statistics Courses

*51. Elementary Statistics. An introduction to the nature of statistical reasoning. The nature of observations. The condensation and presentation 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

Hurst

Lu

*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. (5W)  
Hurst

¹Other University requirements for the Language and Arts group may be substituted if approved by the department.

²Recommended electives: Agron. 106, 107, 109, 155, 165; An. Hus. 10, 150, 155; Ag. Econ. 71, 72, 73; Ag. Eng. 110; Bot. 30, 117, 120, 121, 130; Bus. Ad. 111, 118, 140; C.E. 173; Chem. 17, 18, 101, 104, 105, 106, 121, 122, 123, 190; E.E. 167; Econ. 189, 140, 165, 205, 206; Geol. 3, 4, 115, 117; Hort. 115; L.S. 50, 100; Phil. 141; Psy. 53, 71, 145, 155; Math. 119, 118, 119, 122, 123, 130, 131, 132, 161; Phys. 117, 120, 121; Range 126, 130, 131, 132; Soc. 130, 154; T.E. 57, 58; Vet. Sci. 20; W.L.M. 146; Zool. 111, 112.

*Taught alternate years.
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)

Advanced Applied Statistics. Introductory theory and application of methods of maximum likelihood and least-squares, discriminant analysis, probit analysis, casual system (path) analysis, sequential analysis and linear programming. Prerequisite: Applied Statistics 131 and 132 or permission of instructor. Three lectures. (3W)

Taught alternate years.

Botany and Plant Pathology


Office in Plant Industry 201

Study and research in Botany focus upon four major fields: Cytology, Pathology, Physiology, and Taxonomy. Course requirements for the Bachelor of Science degree in Botany include: Botany 24, 25, 30, 116, 117, 120, 130, 240; Chemistry 3, 4, 5, (under exceptional circumstances 10 and 11 may be authorized by your advisor); Math. 35; Zool. 112. Required additional courses for the various fields of Botany are: Cytology: Botany 118, 150; Chem. 121, 122; Zool. 3, 4, 131; Plant Pathology: Botany 150; Chem. 121, 122; Ent. 108; Zool. 3; Taxonomy: Agron. 56; Botany 118, 150; Range Management 126; Zool. 107, 131, 214.

Recommended additional courses for specialized fields include: Cytology: Chem. 191; Physics 140. Plant Pathology: Agron. 56; Applied Statistics 131, 132; Bact. 70, 71; Ent. 230; Hort. 131; Math. 46, 97, 98, 99; Physics 17, 18, 19; Plant Physiology: Agron. 106; Botany 150, 224; Chem. 101, 115, 121, 122; Math. 46, 97, 98, 99; Physics 17, 18, 19, 140; Physiology 130; Zool. 3, 4; Taxonomy: Applied Statistics 131, 132; Botany 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 the Master of Science degree in the following specialized fields: Cytology, Plant Pathology, Plant Physiology, Taxonomy. The opportunities and facilities for research in these fields are greatly augmented through the cooperation of the USU Agricultural Experiment Station, United States Department of Agriculture, and the Intermountain Herbarium.

As a candidate you must submit a thesis on a topic within the field of your major subject. The thesis alternate, "Plan B," is not acceptable for the M.S. Degree.

Doctor of Philosophy Degree.

The Department of Botany in cooperation with related departments, offers the degree of Doctor of Phi-
losophy in the specialized fields of Plant Physiology and Virology. Detailed information may be obtained from the Department.

Herbarium

The Intermountain Herbarium was established in 1932. 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 USU 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. The facilities are available, by arrangement with the Curator, for consultation and research by qualified members of the University 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.

Botany and Plant Pathology Courses

1. Principles of Biology. Basic life principles illustrated in both plant and animal forms. See lower division group requirements. (57, S) Shaw

24. Elementary Botany. The structure, physiology, and reproduction of flowering plants. Consideration given to basic structure and functions of cells, tissues, stems, roots, leaves, flowers, fruits, and seeds. Three lectures, two labs. (5F, S) Boyle, Shaw

25. Elementary Botany. A survey of the plant kingdom. Emphasis on comparative morphology and reproductive processes of representatives of the major groups of plants. Introduction to the classification of the vascular plants. 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, Shaw

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. Two lectures, two labs. (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. Two lectures, two labs. (4F) Holmgren


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. Two lectures, two labs. (4W) 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. Two lectures, two labs. (4S) Boyle

120. Elementary Plant Physiology. The principal physiological processes 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, S) Wiebe

121. Water Relations of Plants. Factors affecting the availability of water, its absorp-

*Taught alternate years.
tion and use in plants, and the effects of water deficits on plant processes. Prerequisite: Bot. 120. (3W) Wiebe

*125. Morphology of Vascular Plants. Structure, development, reproduction, and evolution of the classes and orders of vascular plants. Prerequisites: Botany 24, 25, and 30. Three lectures, two labs. (6W) Shaw

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. Three lectures, two labs. (5F) Cannon

*140. Forest Pathology. Nature, cause and control of disease affecting forest trees. Factors inducing loss in forest products are emphasized. Prerequisites: Botany 24, 25, and 130, or one quarter of plant ecology. Three lectures, one lab. (4W) Cannon

150. Mycology. Comparative morphology and nuclear behavior of the fungi. A summary of the field with special attention given forms

*Taught alternate years.

Department of

Dairy Industry

(Dairy Production and Dairy Manufacturing)


Office in Animal Husbandry 101

The courses in Dairy Industry offer a general curriculum for a bachelor of science degree, and an applied science or biological curriculum if you plan to continue toward a graduate degree.

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 a Master of Science degree in Dairy Production and in Dairy Manufacturing. The Master of Science degree is acceptable by other universities toward further study on a PhD degree. You may work on a PhD degree in the Nutrition and Biochemistry Inter-departmental Curriculum.
Dairy Production

**General Curriculum.** Designed for a major in Dairy Production to prepare you for the management and operation of dairy farms and herds; or to become a county agricultural agent or a field man in the dairy industry.

You must fill the general requirements of the University and the College of Agriculture. The following courses are also required:

- Dairy 6, 110, 111, 112, 120, 121, 122, and at least three quarters of 215
- Zoology 3, 4, 112
- Botany 24
- Math. 35
- Bacteriology 10 or 70 and 104
- Chemistry 10, 11, 12
- Veterinary Science 20, 120
- Animal Husbandry 10 and 150
- Agricultural Economics 71, 72, 73
- Agronomy 56, 103
- Agricultural Engineering 10 or 110

The following courses are recommended:

- Physics 6
- Veterinary Science 150
- Agronomy 7, 118
- Animal Husbandry 155
- Agricultural Engineering 101
- Agricultural Economics 102, 103
- Entomology 108

**Biological Curriculum.** Designed for a major in Dairy Production to prepare you for technical employment in dairy production and for advanced study and research in this field.

You must fill the general requirements of the University and the College of Agriculture. The following courses are also required:

- Dairy 6, 110, 111, 112, 120, 121, 122, and at least three quarters of 215
- Zoology 3, 4, 112
- Botany 24
- Math. 35, 44
- Bacteriology 70, 104
- Chemistry 3, 4, 5
- Physics 6
- Veterinary Science 20, 120
- Animal Husbandry 10, 150, 155
- Agricultural Economics 71, 72, 73
- Agronomy 56, 103
- Agricultural Engineering 10 or 110

In preparation for advanced dairy production you may specialize in one of three areas: (1) nutrition, (2) breeding or (3) physiology. If you specialize in one of these areas you will be required to take the courses indicated for each in addition to the above courses:

- Nutrition—Chemistry 17, 18, 121, 122 and 190 or 191
- Breeding—Chemistry 12
- Physiology—Chemistry 17, 18, 121, 122, and 190 or 191

**Dairy Manufacturing**

**General Curriculum.** This course will prepare you for commercial dairying to be a plant operator, an equipment and supply technician, a grader, or a sanitarian.

In addition to the general University and College of Agriculture requirements you will be required to take:

- Chemistry 190, 108
- Bacteriology 104, 105
- Business Administration 20, 63
- Dairy Industry 5, 6, 101, 102, 103, 104, 105, 110, 215, 254

**Business Course in Dairy Manufacturing.** This course will prepare you to be a plant manager, a salesman, or a dairy industry administrator.

In addition to the general University and College of Agriculture requirements, you will be required to take:

- Bacteriology 104, 105
- B.A. 20, 63, 100, 156, 171
- I.E. 120
- Dairy Industry 5, 6, 101, 102, 103, 104, 105, 110, 215, 254

**Applied Science Course in Dairy Manufacturing.** This course is taken in technical preparation for research and quality control. In addition to the general University and College of Agriculture requirements, you will be required to take:
Chemistry 3, 4, 5, 17, 18, 108, 121, 122, 190; Bacteriology 104, 105, 180; Applied Statistics 51; Physics 6; Math. 35, 44; B.A. 63; I.E. 120; Dairy Industry 5, 6, 101, 102, 103, 104, 105, 110, 121, 215, 254.

Dairy Courses

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; dairy arithmetic. Practical skills emphasized. (4W) Morris, Starkey

5. Judging Dairy Products. Methods and practice in judging and grading dairy products for market and show. (2S) Larsen


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. Manufacture, packing, and grading of butter under commercial conditions. Quality and composition control are emphasized. (4F) 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. (6F) 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, Larsen

A lie, in order to live, requires ten others for food.
Department of

Horticulture

(Horticulture, Floriculture, Pomology, Vegetable Crops)


Office in Ag Science 204-B

You may pursue a course in General Horticulture or specialize in Floriculture, Pomology or Vegetable Crops. In order to meet requirements of the University and College of Agriculture you will be directed to take certain basic courses the first two years. You will want to take some of the introductory courses in Horticulture to help you understand the application of the required basic courses. Suggested special courses are outlined for the junior and senior years.

If interested in Horticulture you may elect to follow one of three curricula in the College of Agriculture. If a major in General Agriculture, you may enroll in the General Curriculum in Agriculture, choose an advisor in the Department of Horticulture and become associated with activities in this department. This curriculum will also be elected if your major is General Horticulture, Pomology, and Vegetable Crops if you plan to terminate with a B.S. degree. If you elect to major in Floriculture you follow the Biological Science curriculum.

With special aptitude and high scholarship you may enroll in the Applied Science Curriculum in Plant Science which is designed to prepare you for graduate work and technical employment. If you are interested in this course you should contact your advisor or the Department Head. In addition to the requirements of the Applied Science course you must take Chem. 115, 121, 122 and 190 or 191; Bot. 30, 120, 130; Agron. 106, 107; App. Stat. 131 and 132; Hort. 1, 4, 11, 101, 102, 115, and 131; Zool. 112, Ent. 108, Eng. 111.

Three hours of Hort. 153, Seminar, are required for a major in the Department of Horticulture.

Graduate Study

The Department offers work both for the Master of Science and Doctor of Philosophy degree in Horticulture. The outline of studies and the research program are adapted to the objectives of the individual student. The general requirements for these degrees are explained in the School of Graduate Studies. If you are interested in working toward an advanced degree, you should first contact the Head of the Department. He will study your qualifications and interests and recommend an advisor who will assist you in your course work and research program.
Suggested Courses for Students in General Horticulture

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng. 111</td>
<td>3</td>
</tr>
<tr>
<td>Ent. 108</td>
<td>5</td>
</tr>
<tr>
<td>Entomology 120</td>
<td>2</td>
</tr>
<tr>
<td>Hort. 100</td>
<td>2</td>
</tr>
<tr>
<td>Hort. 101-102</td>
<td>8</td>
</tr>
<tr>
<td>Hort. 108</td>
<td>3</td>
</tr>
<tr>
<td>Hort. 105</td>
<td>4</td>
</tr>
<tr>
<td>Zoology 112</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>50</td>
</tr>
</tbody>
</table>

Suggested Courses for Students Specializing in Floriculture

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botany 120</td>
<td>5</td>
</tr>
<tr>
<td>Botany 130</td>
<td>5</td>
</tr>
<tr>
<td>Hort. 115</td>
<td>4</td>
</tr>
<tr>
<td>Hort. 130</td>
<td>4</td>
</tr>
<tr>
<td>Hort. 149</td>
<td>4</td>
</tr>
<tr>
<td>Hort. 152</td>
<td>4</td>
</tr>
<tr>
<td>Hort. 153</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>52</td>
</tr>
</tbody>
</table>

Suggested Courses for Students Specializing in Pomology

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 115</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 121 and 122</td>
<td>10</td>
</tr>
<tr>
<td>English 111</td>
<td>4</td>
</tr>
<tr>
<td>Entomology 108</td>
<td>5</td>
</tr>
<tr>
<td>Entomology 120</td>
<td>2</td>
</tr>
<tr>
<td>Hort. 100</td>
<td>2</td>
</tr>
<tr>
<td>Hort. 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>Zoology 112</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>46</td>
</tr>
</tbody>
</table>

---

**90 College of Agriculture**

Suggested Courses for Students in General Horticulture

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ent. 108</td>
<td>5</td>
</tr>
<tr>
<td>Hort. 100</td>
<td>2</td>
</tr>
<tr>
<td>Hort. 101-102</td>
<td>8</td>
</tr>
<tr>
<td>Hort. 108</td>
<td>3</td>
</tr>
<tr>
<td>Hort. 105</td>
<td>4</td>
</tr>
<tr>
<td>Zoology 112</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>50</td>
</tr>
</tbody>
</table>

Suggested Courses for Students Specializing in Floriculture

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agron. 107</td>
<td>5</td>
</tr>
<tr>
<td>Applied Stat. 131 and 132</td>
<td>6</td>
</tr>
<tr>
<td>Botany 120</td>
<td>5</td>
</tr>
<tr>
<td>Botany 130</td>
<td>5</td>
</tr>
<tr>
<td>Hort. 108</td>
<td>3</td>
</tr>
<tr>
<td>Hort. 115</td>
<td>4</td>
</tr>
<tr>
<td>Hort. 116</td>
<td>3</td>
</tr>
<tr>
<td>Hort. 131</td>
<td>5</td>
</tr>
<tr>
<td>Hort. 149</td>
<td>3</td>
</tr>
<tr>
<td>Hort. 152</td>
<td>4</td>
</tr>
<tr>
<td>Hort. 153</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>52</td>
</tr>
</tbody>
</table>
### Suggested Courses for Students Specializing in Vegetable Crops

#### JUNIOR

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agron. 107</td>
<td>5</td>
</tr>
<tr>
<td>Botany 120</td>
<td>5</td>
</tr>
<tr>
<td>Agron. 109</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 115</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 121, 122</td>
<td>10</td>
</tr>
<tr>
<td>Eng. 111</td>
<td>4</td>
</tr>
<tr>
<td>Hort. 105</td>
<td>4</td>
</tr>
<tr>
<td>Hort. 108</td>
<td>3</td>
</tr>
<tr>
<td>Hort. 116</td>
<td>3</td>
</tr>
<tr>
<td>Hort. 130</td>
<td>4</td>
</tr>
<tr>
<td>Zoology 112</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
</tr>
</tbody>
</table>

#### SENIOR

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agronomy 155</td>
<td>3</td>
</tr>
<tr>
<td>Applied Statistics 131 and 132</td>
<td>6</td>
</tr>
<tr>
<td>Botany 130</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 115</td>
<td>5</td>
</tr>
<tr>
<td>Entomology 108</td>
<td>3</td>
</tr>
<tr>
<td>Hort. 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>Hort. 131</td>
<td>3</td>
</tr>
<tr>
<td>Hort. 140</td>
<td>3</td>
</tr>
<tr>
<td>Hort. 153</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>9</td>
</tr>
</tbody>
</table>

### 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. Three lectures. (SF)

   Norton, Gerber

2. **Elementary Horticulture Lab.** Required for horticulture majors, optional for others. Field trips and laboratory study on operation of horticultural enterprise including: varieties of fruits and vegetables, pruning and grafting, visits to fruit and vegetable markets, agricultural chemical distributors, commercial fruit and vegetable growers, processing plants and other allied industries. Students will pay moderate cost of travel. (IF)

   Norton, Hamson

4. **Vegetable Production.** Principles and practices underlying production of vegetable crops, varieties, fertilizers, pest control, harvesting, storage, and processing of vegetables. Three lectures. (3S)

   Hamson, Gerber

*11. Garden Flowers.** Principles and practices of growing garden flowers, other ornamentals, and house plants. Two lectures, one lab. (8S)

   Riehmann

100. **Pruning and Grafting.** A practical course for all students in the University, 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, 30 hours of arranged lab work on Saturdays 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. 101 deals primarily with vegetable crops and 102 with fruit crops. These courses may be taken separately or in any sequence. Prerequisite: Bot. 24, 25; Chem. 12 or 121; Agron. 106; Hort. 1 or 4. Three lectures, one lab. (4W, 4S)

   Hamson, Gerber

105. **Major Vegetable Crops.** Classification, identification, origin, history, types, and uses of vegetables. One lecture, two labs. (3F)

   Hamson

*108. Small Fruit Production.** The culture of strawberries, raspberries, grapes and other small fruits in home and commercial plantings. (3W)

   Norton

*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 4. Three lectures, one lab. (4S)

   Hamson

*116. Greenhouse Management.** Principles and practices of greenhouse management. Prerequisite: Hort. 11; Bot. 24, 25. (3W)

   Riehmann

118. **Flower Arranging.** Basic principles of design associated with techniques of flower arranging including handling, care and conditioning of flowers. Training will be given in vase, basket, table, dry and Christmas arrangements, and construction of corsages. Emphasis is given on modern design. A modest laboratory fee will be required for the purchase of materials for making flower arrangements. Two lectures, one lab. (3F)

   Staff

*119. Systematic Floriculture.** Systematic study of garden flowers. Prerequisites: Hort. 11; Bot. 30, 120. Systematic study of plants grown by florists. Two lectures, one lab. (3F)

   Riehmann

*Taught alternate years.
**122. Nursery Management.** Propagation and culture of ornamental nursery stock including shrubs, trees, and evergreens. Two lectures, one lab. (3W) *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. Three lectures, one lab. (4F) *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 Department of Botany and Plant Pathology, Horticulture, and Zoology. Entomology, and Physiology. Prerequisites: Bot. 130, Ent. 108 or special permission. Three lectures, two labs. (5S) *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; Bact. 10 or 70 and 71, or special permission. Three lectures, one lab. (4F) *Salunkhe*

**152. Fruit and Vegetable Handling.** A study of the major deciduous fruits and vegetables in the United States. Problems in handling and marketing including picking, grading, packing, transportation, storage, distribution, buildings, equipment, roadside, local, and large scale marketing. Laboratories will be chiefly two all-day Saturday trips at the first of the quarter and two or three trips on the regularly scheduled laboratory period. Students will be expected to pay their share of approximately 800 miles of travel within the state. Prerequisite: Hort. 1. (4F) *Gerber*

153. Seminar. Oral and written reports on research papers and original work by students. Registration by permission only. (IF, 1W, 1S) *Staff*

156. Special Problems. Advanced problems in floriculture, pomology, and vegetable crops for qualified seniors or graduate students. Assigned reading, 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. *Staff*

215. Special Problems. Any quarter. Credit arranged. *Staff*

220. Advanced Breeding. A study of special techniques and practices used in the breeding of horticultural crops. Prerequisite: Hort. 115. (3) *Hanson*

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*

As you make your bed, so you must lie on it.
Department of Poultry Husbandry

PROFESSORS C. I. Draper, HEAD; J. O. Anderson; ASSOCIATE PROFESSORS J. D. Carson, D. W. Thomas; ASSISTANT PROFESSOR E. Clark; RESEARCH ASSOCIATES D. C. Dobson, S. Atkinson.

Office in Animal Industry 201

For a major in Poultry Husbandry you 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; Animal Husbandry 150; Zool. 112; and Chemistry 190.

Graduate Study

The Department offers a Master of Science degree in Poultry Nutrition, Breeding and Management.

Suggested Course of Study for Majors

**FRESHMAN**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiol. 4</td>
<td>5</td>
</tr>
<tr>
<td>P.H. 1</td>
<td>5</td>
</tr>
<tr>
<td>Math 34 or 35</td>
<td>3 or 5</td>
</tr>
<tr>
<td>M.S. or P.E.</td>
<td>3</td>
</tr>
<tr>
<td>Bact. 70</td>
<td>5</td>
</tr>
<tr>
<td>Zool. 3</td>
<td>5</td>
</tr>
<tr>
<td>Vet. Sci. 20</td>
<td>5</td>
</tr>
<tr>
<td>Hort. 1</td>
<td>3</td>
</tr>
<tr>
<td>Eng. 1, 2, 3</td>
<td>9</td>
</tr>
<tr>
<td>Rural Soc. 10</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50 or 52</td>
</tr>
</tbody>
</table>

**SOPHOMORE**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veg. Prod. 4</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 3, 4, &amp; 5</td>
<td>15</td>
</tr>
<tr>
<td>Agron. 56</td>
<td>4</td>
</tr>
<tr>
<td>M.S. or P.E.</td>
<td>3</td>
</tr>
<tr>
<td>Soc. Sci.</td>
<td>3</td>
</tr>
<tr>
<td>Ag. Econ. 71, 72, 73</td>
<td>9</td>
</tr>
<tr>
<td>L.A. 3</td>
<td>3</td>
</tr>
<tr>
<td>A.H. 1</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50</td>
</tr>
</tbody>
</table>

**JUNIORS**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 190</td>
<td>3</td>
</tr>
<tr>
<td>Lib. Sc. 50</td>
<td>1</td>
</tr>
<tr>
<td>Zool. 112</td>
<td>5</td>
</tr>
<tr>
<td>P.H. 126, 107, 105, or 106, 104</td>
<td>9</td>
</tr>
<tr>
<td>Agron. 103</td>
<td>3</td>
</tr>
<tr>
<td>Vet. Sci. 120</td>
<td>4</td>
</tr>
<tr>
<td>A.H. 150</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>17</td>
</tr>
</tbody>
</table>

**SENIOR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiol. 121, 122</td>
<td>10</td>
</tr>
<tr>
<td>Entom. 108</td>
<td>5</td>
</tr>
<tr>
<td>P.H. 125, 126, 105 or 106</td>
<td>6</td>
</tr>
<tr>
<td>D.H. 110</td>
<td>3</td>
</tr>
<tr>
<td>Agr. Engr. 101 or 109</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>46</td>
</tr>
</tbody>
</table>

Suggested Electives: Irr. and Dr. 10; Vet. Sci. 140; Animal Husbandry 155; Appl. Stat. 131, 132; Chemistry 125, 126, English 5, 111.

**Poultry Husbandry Courses**

1. **Poultry Production.** A study of breeds of chickens and turkeys, incubation, brooding, feeding, selection, marketing, and problems of production of chickens and turkeys. Exercises in practical problems is included in the laboratory section. Four lecture, one lab. (55) Draper

*104. Embryology and Incubation.* Emphasis on the embryology of the chick with consideration of problems involved in incubation and hatchery operations. Three lectures and one lab. Lab. arr. (48) Carson

*105. Poultry Management.* Problems of locations of poultry farm, farm planning, renewing the flock and management problems of the growing, laying and breeding flocks. Prerequisite: Poultry 1. (3W) Draper

*On leave.

*Taught alternate years.*
94 College of Agriculture


*107. Applied Poultry Nutrition. 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. (3S) Anderson

*108. Poultry Products. Problems in Processing, grading, packaging, transporting, labeling, storing and marketing poultry products. (1F) 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 120.) (4S) Staff

Principles of Nutrition (See Animal Husbandry 150) (4W) Staff

210. Research Problems in Poultry Husbandry. Credit Arranged. (F, W, S) Staff

Nutrition and Biochemistry Seminar (See A.H. 270) Staff

*Taught alternate years.

Department of Veterinary Science

PROFESSORS M. L. Miner, HEAD, J. L. Shupe; ASSOCIATE PROFESSOR D. W. Thomas; ASSISTANT PROFESSORS J. T. Blake, J. W. Call, R. A. Smart, J. A. Thomas; RESEARCH ASSOCIATE A. E. Olson; RESEARCH ASSISTANT M. McCartney; COLLABORATOR W. Binns.

Office in Veterinary Science Building

Courses in this department are not designed to train you to become a veterinarian. If you desire to study toward a degree in veterinary medicine (D.V.M.), you must have at least two years and preferably three of preveterinary training at some authorized college or university, completing the basic required courses. You should then apply for entrance into a school of veterinary medicine. Enrollment in veterinary schools is limited. If you are majoring in either bacteriology, zoology, animal husbandry, dairy husbandry, poultry husbandry, or chemistry, you 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 for Higher Education whereby Utah will subsidize the training of five students in each of the four years in veterinary schools operating under the compact. If you are a Utah resident and have completed the pre-veterinary requirements, you must apply to the Utah Commission for certification to the three Western veterinary schools operating under the compact. You must also make an independent application to the schools of your choice. Your acceptance is dependent on the choice of students 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, 46; *Botany 24; *Animal Husbandry 1, 2, 10; *Poultry 1, 2; *Dairy 2; 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 you expect 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) 

Blake

120. Animal and Poultry 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) 

Call

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) 

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. (5S) 

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


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 hematopoietic, respiratory, digestive, urinary, genital, endocrine, nervous, locomotor and tegumentary systems. Prerequisite: V.S. 230. Three lectures, two labs. (5S) 

Shupe

*Taught alternate years.

A good reputation sits still; a bad one runs about.
He never was a friend who ceases to be for a slight cause.
College of Business
and Social Sciences

R. P. Collier, Dean
College of

Business and Social Sciences

Department of Business Administration
and Secretarial Science, 100
- Accounting, 101
- Business Management, 102
- Marketing, 102
- Industrial Management, 103
- Business Education, 104
- Secretarial Science, 106
- Combination Major in Secretarial or Clerical Practice and Family Life, 107

Department of Economics, 110

Department of History and Political Science, 112
- History, 112
- Political Science, 114
- Pre-Law, 115
- Social Science, 116

Department of Sociology and Social Work, 116
- Sociology, 116
- Social Work, 118

Degrees Offered:
- Bachelor of Science
- Master of Business Administration
- Master of Science
- Doctor of Philosophy
Four departments are included in the College of Business and Social Sciences: Business Administration and Secretarial Science, Economics, History and Political Science, Sociology and Social Work.

These basic departments are further divided to permit majors in more specialized areas. The Department of Business Administration and Secretarial Science includes Accounting, Business Education, Business Management, Industrial Management, Marketing, and Secretarial Science. You may major in any one of these fields: Majors in History, Political Science, and Pre-law are possible in the Department of History and Political Science. Sociology offers majors in either Sociology or Social Work. There is only one major 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 specialists, 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 assist in the selection of courses. All course programs in each area must be approved by your adviser and the dean.

The great majority of graduates go directly into some business activity. A few continue on to graduate school, and the course program can be 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 provide 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. A number who plan a business career consider that the social science background and degree provide a substantial basis for business.

Foreign Service Training. 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.
Department of

Business Administration and Secretarial Science
(Accounting, Business Management, Business Education, Industrial Management, Marketing, Secretarial Science)


A major in this department may specialize in Accounting, Business Management, Marketing, Industrial Management, Business Education, or Secretarial Science.

To provide a broad understanding of the world in which we live, as well as to develop basic communicative skills, the following program is recommended for Business Administration majors in the freshman and sophomore years:

**FRESHMAN**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Communications</td>
<td>9</td>
</tr>
<tr>
<td>Biology 1</td>
<td>5</td>
</tr>
<tr>
<td>Physiology 4 or Bacteriology 10 or 70 and 71</td>
<td>5</td>
</tr>
<tr>
<td>Mathematics or Exact Science</td>
<td>8</td>
</tr>
<tr>
<td>History or Political Science</td>
<td>5</td>
</tr>
<tr>
<td>Psychology 53</td>
<td>5</td>
</tr>
<tr>
<td>Introduction to Business B.A. 20</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
</tr>
<tr>
<td>P.E. or M.S.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>48</td>
</tr>
</tbody>
</table>

**SOPHOMORE**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Administration 1, 2, 3</td>
<td>12</td>
</tr>
<tr>
<td>Economics 51, 52</td>
<td>10</td>
</tr>
<tr>
<td>Language Arts (Literature, etc.)</td>
<td>10</td>
</tr>
<tr>
<td>Sociology, History, or Political Science</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>8</td>
</tr>
<tr>
<td>P.E., M.S. or A.S.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>48</td>
</tr>
</tbody>
</table>

1Two credits are given each quarter for M.S. or A.S.

The upper division work is intended to develop the specific skills needed for a successful business career. In addition to introductory Accounting and Economics, as a Business major you are required to complete: Statistics (B.A. 131 and 132) preferably in the junior year, and Business Policy (B.A. 149) in the senior year. Corporation Finance (B.A. 130), Principles of Marketing (B.A. 151), Intermediate Economic Theory (Econ. 107-8), Money and Banking (Econ. 165), and Business Cycles (Econ. 171), are strongly recommended. Law (B.A. 4, 5, 6) should also be taken.

**Graduate Study**

The College of Business and Social Sciences now offers a Master of Science degree in Accounting and a Master of Business Administration degree. This program is open to qualified graduate students regardless of their previous major. The time necessary for completion will depend, however, on the basis of the background and preparation. One year should suffice for well trained Business and Economics majors, while two years may be required if little or no previous business training has been taken.
The emphasis is upon individual development and independent research, with small classes or seminars and close student-faculty relationship.

**Introductory Courses**

1, 2, 3. Introductory Accounting. Lectures, 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, 4F, S) **Staff**

4, 5, 6. Business Law. Course 4 is a general survey. It is also introductory for students who take additional Commercial Law courses. Courses 5 and 6 are devoted to a comprehensive study of the law of contracts and agency. Open to all students of sophomore standing or above. (2F, 2W, 2S) **Olson**

14. Electric Accounting Machines. A survey of the development and importance of better ways and means of keeping records as factors in the cultural growth of societies. The basic principles involved in record keeping and data processing by means of modern electric accounting machines. (3F) **Bell**

15. IBM Machine Practice. A laboratory course in the operation of electric accounting machines such as the key punch, verifier, sorter, interpreter, reproducing punch, collator, and tabulating machine. One hour of demonstration and two hours of individual practice on the machine each week. Prerequisite B.A. 14; or B.A. 14 and 15 may be taken concurrently. (1F, 1W, 1S) **Bell**

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. (3F, 3W) **Collier, Tezak**

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**

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 cases. (4F, 4S) **James**

---

**Accounting**

If majoring in Accounting, you should take the following courses in addition to the general departmental requirements: B.A. 101, 102, 103, 111, 127, 130, as well as additional Law.

**Accounting Courses**

100. Survey of Accounting Principles. For Engineering, Agriculture, Family Life, Forestry, and other non-business students. (4F, W, S) **Tezak**

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, 106, 107, 108. Business 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, conveyancing, abstracts of title, mortgages, wills. Courses 106 and 108 alternate with 107 and 108; 105 and 106 will be given in 1960-61. Prerequisites: B.A. 4, 5, 6 or the consent of the instructor. (3F, 3W, 3S) **Olson**

111. Industrial Cost Accounting. Job costing, process accounting, and special considerations. (5W) **Gardner**

116. Accounting Machines Wiring. Wiring of control panels for the operation of the accounting machine, the reproducing punch, and the collator in the preparation of assigned reports. Prerequisite: B.A. 14. Two lecture periods and two lab periods of two hours each. (3F, W, S) **Bell**

118. Procedure Development. Principles of job planning and procedure development as applied to the electric accounting machine method of keeping records and processing statistical data. Prerequisite B.A. 116. Two lectures and one lab. (3) **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. (4F, 4W) **Cannon**
102 College of Business

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. (3S) Cannon

199. Internship in Accounting. Practical experience with public accounting firms and approved business in the Intermountain and Pacific Coast Region for selected seniors. Credit arranged, not to exceed 7 hours. (W) Staff

Business Management

If majoring in Business Management, you should take the following courses in addition to the general departmental requirements: B.A. 130, 133, 134, 135, 150, and 151.

Business Management Courses

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. (5W, S) Collier


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. 1, 2, 3. (3F, 3W, 3S) Gardner

138. Production Planning and Control. Study and application 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. (3) 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 of insurance companies. (3F) Calder

141. Real Estate. Introduction to real estate contracts, forms, principles, and recent Federal housing legislation. (3S) Durtchi

147, 148. Administration of Small Business. (For non-business majors only.) Designed for students in Engineering and Technology, Agriculture, etc. 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

150. Business Policy. A co-ordinating course to develop perspective, judgment, and facility in solving problems in production, distribution, personnel, finance, control, and social aspects of business. Prerequisites, B. A. 150, 151, 152, 150. Required of all Business Administration majors. (5S) Gardner

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. (3) Staff

Marketing

If majoring in Marketing, you should take the following courses in addition to general departmental requirements: B.A. 150, 151, 152, 153, 161.

151, 152, 153. Principles and Problems of Marketing. Organization of the marketing system including functions, institutions, policies, and practice. (5F, 5W, 5S) Calder

156. Principles of Advertising. Intended for those who as business executives may direct advertising programs. Includes study of the structure of advertisements for different products, choice of media, consumer research, and the work of advertising departments and agencies. (5F) Calder
160. **Sales Management.** 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. (5) **Staff**

161. **Principles and Problems in Retailing.** 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. (5F, S) **James**

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) **James**

---

**Industrial Management**

The program in Industrial Management provides opportunities for development of supervisory and managerial skills. It includes: (1) a strong foundation in general education and the humanities; (2) a major or a strong minor in one or more of the technological fields; (3) emphasis upon human relations and leadership.

It is advisable for you to have some practical work experience in addition to classwork. It is possible to get as much as 30 weeks' on-the-job experience during the summer months while working toward the degree. Assistance in locating summer work will be given by your adviser. Consult your adviser as early as possible about electives, the minor program, and work experience opportunities.

**JUNIOR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.A. 1, 2, 3, Intro. Accounting</td>
<td>12</td>
</tr>
<tr>
<td>I.E. 104, Occupational Analysis</td>
<td>3</td>
</tr>
<tr>
<td>B.A. 132, 134, 135, Prob. in Ind. Mgmt.</td>
<td>9</td>
</tr>
<tr>
<td>I.E. 118, Industrial Safety</td>
<td>3</td>
</tr>
</tbody>
</table>

**SENIOR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.A. 170, Foremanship and Supervision</td>
<td>3</td>
</tr>
<tr>
<td>B.A. 174, Functions of Management</td>
<td>3</td>
</tr>
<tr>
<td>Speech 109, Discussion and Conference Leadership</td>
<td>3</td>
</tr>
<tr>
<td>T.E. 180, Time Study Methods</td>
<td>3</td>
</tr>
<tr>
<td>T.E. 183, Plant Layout</td>
<td>3</td>
</tr>
<tr>
<td>B.A. 172, Job Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>B.A. 171, Personnel Administration</td>
<td>5</td>
</tr>
<tr>
<td>Sociology 158, Human Relations in Ind.</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 150, Comparative Systems</td>
<td>3</td>
</tr>
<tr>
<td>Approved Electives</td>
<td>12</td>
</tr>
</tbody>
</table>

**170. 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. (5F, S) **McBride**

**171. 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. (5F, S) **Neuberger**

**172. Job Evaluation and Wage Administration.** The place of job evaluation and wage administration 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. 170 and B. A. 174. (3W) **McBride**

**174. Functions of Management.** Examination of the planning, organization, recruiting, directing, and controlling functions of management. (3F) **McBride**

**201, 202. Advanced Accounting Principles.** The study of special accounting problems. (3F, S) **Cannon**

**204, 205. 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**
Advanced Cost Accounting. Special cases in estimating costing, standard costing, direct costing, and advanced theory in cost accounting. (6S) Gardner

290. Thesis. For students preparing a master's degree thesis. Credit arranged. (F, W, S) Staff

295. Independent Research and Reading. Credit arranged. (F, W, S) Staff

298. Accounting Seminar. (S) Cannon

Business Education

The College of Business and Social Sciences and the College of Education cooperate in the preparation of students for a professional career in Business Education. Both an undergraduate and a graduate program in Business Education are available for students preparing to teach, as well as experienced teachers of business subjects. See Graduate School section for detailed requirements for completing the Master's degree.

The following curriculum is suggested for students preparing to enter the business education profession. It should be recognized that changes in the suggested program may be worked out with your adviser. The program of studies for transfer students must be adjusted to meet the minimum professional requirements and allow for acceptance of transfer credit.

Composite major (B.A.-S.S.) minimum 60 hrs.
Major 30-50 hours
Minor (if desired) minimum 18 hours

Required Courses (R)
Suggested Courses (S)

FRESHMAN YEAR

Fall
Eng. 1 Basic Com. .................................................. 3 R Biology 1 ................................................................... 5 R B.A. 30 Bus. Math or Math Course ....................... 3 R S.S. 65 Filing .......................................................... 2 R S.S. 41 Elem. Type or equiv. .................. 2 R P.E. or M.S. .......................................................... 1 R

Winter
Eng. 2 Basic Com. .................................................. 3 R Phy. 4 Phys. or Bact. 10 ....................... 5 R Math. or Ex. Sci. Elect. .................................. 5 R S.S. 42 Inter. type or equiv. .................. 2 R P.E. or M.S. .......................................................... 1 R

Spring
Eng. 3 Basic Com. .................................................. 3 R Math. or Ex. Sci. Elect. .................................. 3 R S.S. 43 Adv. Type ............................................. 2 R Psy. 53 El. Gen. Psy. ........................................ 5 R P.E. or M.S. .......................................................... 1 R

SOPHOMORE YEAR

Fall
B.A. 4 Bus. Law or equiv. ........................................ 2 R B.A. 63 Salesmanship ........................................ 4 S S.S. 75 Fund. of Shtd. 1 .................................. 3 S B.A. 1 Intro. Acctg. .............................................. 4 R Lang. or Arts elect. ............................................ 3 R P.E. or M.S. .......................................................... 1 R

Winter
B.A. 2 Intro. Acctg. .............................................. 4 R B.A. 5 Bus. Law or equiv. .................................. 2 R Lang. or Arts elect. ............................................ 5 R S.S. 76 Fund. of Shtd. II .................................. 3 S S.S. 92 Bus. Mach. ............................................. 2 R P.E. or M.S. .......................................................... 1 R

Spring
B.A. 6 Bus. Law or equiv. ........................................ 2 R S.S. 77 Fund. of Shtd. III .................................. 3 S Lang. or Arts elect. ............................................ 2 S Ec. 51 Gen. Econ. ................................................ 5 R B.A. 3 Intro. Acctg. .............................................. 4 S P.E. or M.S. .......................................................... 1 R

JUNIOR YEAR

Fall

Winter

104 College of Business

17-18
Students who have taken business skill courses such as typewriting and shorthand in high school will be placed in the appropriate level course by means of proficiency examinations. Courses by-passed in this manner should have elective courses substituted for them.

The three senior quarters should be considered as interchangeable so that student teaching may be taken in any quarter. Perhaps the most desirable time for enrolling in student teaching is the Fall Quarter since students will get the experience of seeing classes start at the first of the school year. Methods courses should be taken in the junior year if student teaching is to be taken in the fall or winter quarters.

Students may count either B.E. 178 or 179 toward the 33-credit professional requirement if needed.

Business Education Courses

B.E. 85. Consumer Education. The general problems of earning and spending an income. Aids to the wise buying of a home, transportation, insurance, and other major consumer items. No prerequisites. (3F, 3W, 3S)

James-McGill

B.E. 178. Methods of Teaching Business—non-skilled. A study of the methods of teaching as applied to basic business courses. General Business, Business Law, Business Principles, Business Arithmetic, Economic Geography, etc. Also, a study of methods applicable to recordkeeping and bookkeeping. This course is designed for the inexperienced business teacher education student. (3F)

McGill

B.E. 179. Methods of Teaching Business—skilled. A study of the methods of teaching as applied to the skill courses. Typewriting, Shorthand, Office Machines, and Office Practice or the inexperienced business teacher education student. (3W)

Olsen

B.E. 189. Principles of Business Education. The study of current problems in Business Education and a survey of the recent literature in the field. (3S)

McGill

B.E. 210. Improvement of Instruction in Typewriting. A study of the basic factors of typewriting skill and improvement of methods and techniques in typewriting for the experienced business teacher. (3Su and as needed)

McGill

B.E. 220. Improvement of Instruction in Shorthand and Transcription. Designed for in-service teachers of shorthand and transcription. A study of improved methods and techniques applicable to the teaching of shorthand and related courses in the high school and Junior College level. (3Su and as needed)

Staff

B.E. 230. Improvement of Instruction in Bookkeeping and Accounting. Designed for the in-service teacher of bookkeeping and accounting. A study of improved methods and techniques for in-service business teachers at the secondary and at the college level. (3Su and as needed)

McGill
Secretarial Science

The program of Secretarial Science is arranged on both a four-year degree pattern and a two-year certificate pattern. Students who initially start on a two-year program may change to a four-year degree program by making up degree requirements.

The following suggested program for the bachelor of science degree with a major in secretarial science may be adjusted by the adviser so as to more specifically meet the individual needs. Transfer students’ programs will be adjusted to provide for transfer of credits.
## Winter

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.A. 2 Accounting</td>
<td>4</td>
</tr>
<tr>
<td>B.A. 5 Bus. Law</td>
<td>2</td>
</tr>
<tr>
<td>S.S. 130 Bus. Com.</td>
<td>3</td>
</tr>
<tr>
<td>B.A. 185 Mg. Per. Fin. or upper B.A. elective</td>
<td>3</td>
</tr>
<tr>
<td>Electives or Minor</td>
<td>3</td>
</tr>
</tbody>
</table>

### Spring

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology 53</td>
<td>5</td>
</tr>
<tr>
<td>B.A. 6 Bus. Law</td>
<td>2</td>
</tr>
<tr>
<td>S.S. 167 Office Practice</td>
<td>2</td>
</tr>
<tr>
<td>Electives or Minor</td>
<td>6</td>
</tr>
</tbody>
</table>

### Senior Year

**Fall**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ. 165 Money and Banking (or elect.)</td>
<td>3</td>
</tr>
<tr>
<td>B.A. 171 Per. Adm. (or 151)</td>
<td>5</td>
</tr>
<tr>
<td>Electives</td>
<td>7</td>
</tr>
</tbody>
</table>

**Winter**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.A. 14 Elec. Acct. Mach. (or elect.)</td>
<td>3</td>
</tr>
<tr>
<td>B.A. 15 IBM Mach. Pract. (or elect.)</td>
<td>1</td>
</tr>
<tr>
<td>S.S. 175 Office Mgt.</td>
<td>3</td>
</tr>
<tr>
<td>S.S. 186 Sec. Proc.</td>
<td>3</td>
</tr>
<tr>
<td>Electives or Minor</td>
<td>6</td>
</tr>
</tbody>
</table>

### Spring

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.S. 87 IBM Key Punch Spd. Bldg. (or elect.)</td>
<td>1</td>
</tr>
<tr>
<td>Econ. 127 Soc. Sec.</td>
<td>3</td>
</tr>
<tr>
<td>S.S. 187 Sec. Proc.</td>
<td>3</td>
</tr>
<tr>
<td>Electives or Minor</td>
<td>8</td>
</tr>
</tbody>
</table>

## Family Life Courses

### Household Administration

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.A. 65 Housing</td>
<td>3</td>
</tr>
<tr>
<td>H.A. 160 Household Equipment</td>
<td>3</td>
</tr>
<tr>
<td>H.A. 149 Home Management</td>
<td>3</td>
</tr>
<tr>
<td>B.E. 85 Consumer Education</td>
<td>3</td>
</tr>
</tbody>
</table>

### Clothing Textiles

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.T. 51 Art in Everyday Living</td>
<td>3</td>
</tr>
<tr>
<td>C.T. 6 or 8 Basic Clothing Construction</td>
<td>3</td>
</tr>
<tr>
<td>C.T. 24 Textiles</td>
<td>3</td>
</tr>
<tr>
<td>C.T. 33 Intermediate Clothing Const.</td>
<td>3</td>
</tr>
<tr>
<td>C.T. 185 Family Clothing</td>
<td>3</td>
</tr>
</tbody>
</table>

### Foods and Nutrition

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>F.N. 241 Food Selection and Preparation</td>
<td>5</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

### Family Life—Child Development

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLCD 67 Early Childhood</td>
<td>3</td>
</tr>
<tr>
<td>FLCD 68 Preschool Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>FLCD 108 Guidance of the Young Child</td>
<td>3</td>
</tr>
<tr>
<td>FLCD 100 Human Growth and Development</td>
<td>3</td>
</tr>
<tr>
<td>FLCD 110 Family Development</td>
<td>3</td>
</tr>
<tr>
<td>FLCD 115 Growth of the Infant</td>
<td>3</td>
</tr>
<tr>
<td>FLCD 180 Marriage Counseling</td>
<td>3</td>
</tr>
<tr>
<td>FLCD 185 The Family in Middle and Later Years</td>
<td>3</td>
</tr>
<tr>
<td>FLCD 20 Preparation for Marriage and Family Living</td>
<td>3</td>
</tr>
<tr>
<td>or FLCD 120 Marriage</td>
<td>3</td>
</tr>
</tbody>
</table>

---

1 Required Classes.
108 College of Business

Two-year secretarial program. A two-year secretarial course is offered to prepare you for a secretarial position as quickly as possible. An official certificate is granted for successful completion of the two-year course.

Two-year Clerical Program. A two-year clerical program is offered to help you qualify for a clerical position. The official certificate is granted upon completion of the two-year course.

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1</td>
<td>3</td>
</tr>
<tr>
<td>Biology 1</td>
<td>5</td>
</tr>
<tr>
<td>S.S. 51</td>
<td>2</td>
</tr>
<tr>
<td>S.S. 75 or elect.</td>
<td>3</td>
</tr>
<tr>
<td>S.S. 41 or elect.</td>
<td>2</td>
</tr>
<tr>
<td>P.E.</td>
<td>1</td>
</tr>
</tbody>
</table>

**Winter**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 2</td>
<td>3</td>
</tr>
<tr>
<td>Psychology 53 or Econ. 51</td>
<td>5</td>
</tr>
<tr>
<td>S.S. 76 or elect.</td>
<td>3</td>
</tr>
<tr>
<td>S.S. 42 or elect.</td>
<td>2</td>
</tr>
<tr>
<td>S.S. 92</td>
<td>2</td>
</tr>
<tr>
<td>P.E.</td>
<td>1</td>
</tr>
</tbody>
</table>

**Spring**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 3</td>
<td>3</td>
</tr>
<tr>
<td>Exact Science</td>
<td>5</td>
</tr>
<tr>
<td>S.S. 77 or elect.</td>
<td>3</td>
</tr>
<tr>
<td>S.S. 43</td>
<td>2</td>
</tr>
<tr>
<td>P.E.</td>
<td>1</td>
</tr>
<tr>
<td>Electives or minor</td>
<td>3</td>
</tr>
</tbody>
</table>

**SECOND YEAR**

**Fall**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language Arts</td>
<td>5</td>
</tr>
<tr>
<td>S.S. 65 Filing</td>
<td>3</td>
</tr>
<tr>
<td>S.S. 141</td>
<td>5</td>
</tr>
<tr>
<td>P.E.</td>
<td>1</td>
</tr>
<tr>
<td>Electives or minor</td>
<td>3</td>
</tr>
</tbody>
</table>

**Winter**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>5</td>
</tr>
<tr>
<td>B.A. 1</td>
<td>4</td>
</tr>
<tr>
<td>S.S. 142</td>
<td>5</td>
</tr>
<tr>
<td>P.E.</td>
<td>1</td>
</tr>
<tr>
<td>Electives or minor</td>
<td>3</td>
</tr>
</tbody>
</table>

**Spring**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>4</td>
</tr>
<tr>
<td>S.S. 94 or elect.</td>
<td>3</td>
</tr>
<tr>
<td>S.S. 130</td>
<td>5</td>
</tr>
<tr>
<td>S.S. 167</td>
<td>2</td>
</tr>
<tr>
<td>P.E.</td>
<td>1</td>
</tr>
<tr>
<td>Electives or minor</td>
<td>4</td>
</tr>
</tbody>
</table>
Secretarial Science Courses

41. **Elementary Typewriting.** For students with 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) **McGill**

42. **Intermediate Typewriting.** Assumes previous training in typewriting. Practice in typing letters, envelopes, manuscripts, business forms. Prerequisite: S.S. 41 or equiv. (2F, W, S) **Lundstrom**

43. **Advanced Typewriting.** Typing of minutes, legal forms, business forms, rough drafts, stencils for duplication. Prerequisite: S.S. 42 or equiv. (2F, W, S) **Lundstrom**

45. **Speed Building Typewriting.** Remedial typewriting, with emphasis on improvement of accuracy and speed. (IF, W, S) **McGill**

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) **Peterson**

65. **Filing.** Training in alphabetical, numeric, subject, decimal, geograhic, and soundex methods of filing. Indexing, coding, and filing of letters and cards. (3F, W, S) **Lundstrom**

75. **Fundamentals of Shorthand I.** Assumes no previous training in shorthand. Study of fundamentals of simplified Gregg shorthand. (3F, W) **Olsen, Peterson**

76. **Fundamentals of Shorthand II.** Continuation of course 75. Introduction of new-matter dictation. Prerequisite: S.S. 75 or equiv. (3W, S) **Olsen, Peterson**

77. **Fundamentals of Shorthand III.** Continuation of course 76. Intensive practice in new-matter dictation. Prerequisite: S.S. 76 or equiv. (3F, S) **Olsen, Peterson**

87. **IBM Keypunch Speedbuilding.** Three one-hour lab periods per week. Prerequisite: One year of typing. Time arranged. (1F, W, S) **Bell**

92. **Business Machines.** Basic training in use of ten-key adding machines, full-keyboard adding listing machines, and rotary calculators. (2F, W, S) **Peterson**

94. **Posting and Keydriven Machines.** Practice in addition, multiplication, subtraction, and division of key-driven calculators and application of the machines to such business computations as percentages, discounts, decimal equivalents, and constants. Application of the ten-key and full-key bookkeeping machines to business and financial institutions. (3F, W, S) **Olsen**

130. **Business Communications.** Fundamental principles of business letter writing, such as sales, order, collection, adjustment, and application letters. Not open to freshmen. Prerequisite: English 1, 2, and 3. (3F, W) **Lundstrom**

141, 142, 143. **Dictation and Transcription I, II, III.** A continuation of the study of shorthand fundamentals and a development of transcription skill. Admission to 141 should require a minimum dictation speed of 80 words a minute and a minimum grade of "C" in the course immediately preceding the course in which a student wishes to enroll. Prerequisite: S.S. 77 or equiv., and S.S. 43 or equiv. (5F, 5W, 5S) **Olsen, Peterson**

167. **Office Practice.** Training in use of dictating and transcribing machines, spirit duplicator, mimeograph, mimeoscope. Prerequisite: S.S. 43 or equiv. (2F, W, S) **Olsen, Peterson**

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. Prerequisite: B.A. 26, Econ. 51, 52. (3F, S) **Neuberger**

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) **Olsen**

Women who scream at their children, nag their husband, keep a slovenly house or are untidy in their person are a curse to mankind.
The Department of Economics offers the Bachelor of Science and Master of Science degrees. A student who plans to complete a major should register with the head of the Department after he achieves junior standing. A prospective major should take classes in business statistics and in accounting. Any student who plans to do graduate work in economics should have good training in mathematics and in languages. The following upper division courses in economics are required for all economics majors: 106, 107, 108, 165, 171; additional courses will be added from the specialized and applied areas as determined by the specific interests of the prospective major.

Economics 51 and 52 are prerequisites for all of the upper division theory courses.

Economics Courses

51. General Economics. For any university student regardless of major. 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 development of economic theories of leading thinkers in Western civilization from 1750 to now. (3F) Arrington


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) Marston, Murray

126. Trade-Unionism and the Law. The legal framework 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) Israelensen

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) Collier

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. (3S) Israelensen

147. Public Utilities. A study of the characteristics of public utilities, regulatory commissions, rate structures, rate discrimination, finance, and rates of returns. (3S) Israelensen

150. Comparative Economic Systems. A study of the types of economic systems in capitalist, socialist, and communist countries; of the theories upon which they are based, and the alternative methods of organizing economic activity. (3S) Arrington

155. Public Finance and Fiscal Policies. 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. (3W) Israelensen
Economics 111

156. Special Problems in State and Local Finance. A critical examination of the tax structure of Utah and its ability to finance public services. Alternative sources of revenue and the school finance program will receive special consideration. (2W) Israelsen

165. Money and Banking. Development of our present monetary and banking system; a critical analysis of central banking. (5F, W) Israelsen

170. Economic History of the United States. Development of agriculture, industry, labor, transportation and finance from colonial times to now. (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) Durtshi

172. Business Forecasting. This course will emphasize short run forecasting and analysis, but some consideration will be given to long run forecasting. (3W, S) Marston

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

188. Economic Growth and Development. Study of the economic problems of underdeveloped, emergent, and mature economies, and of the alternative techniques and policies for the promotion of growth and development. (2S) Arrington

200. Research in Economics. Investigations by graduate students. Credit granted according to work done. (F, W, S) Staff

201. Readings and Conferences. Credit arranged. (F, W, S)

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) Durtshi

206. Income Theory. A comprehensive review of the literature and methods of macro-economics, and a study of the public policies based thereon. (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


211. Literature of Economics. An intensive study of the bibliographical materials and literature of economics. Permission of instructor required. (2W) Israelsen

212. 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

You need more than dancing shoes to be a dancer.
History and Political Science

(History, Political Science, Pre-Law, Social Science)


Offices in Main 274, 275, 276, 277, 278, 279

History

The Department offers work leading to the Bachelor of Science and the Master of Science degrees. If you intend to pursue graduate study, you should complete two years of French or German.

For a major in History, you must complete 50 hours in History (or 40 hours in History and 10 hours in closely related fields, the courses to be approved by your adviser). Your minor (of a minimum of 18 hours) should be in a closely related field, and courses taken for the minor may not duplicate those taken for the 10 hours of related subjects used for the major if you follow the 40-10 pattern.

If you wish to minor in History, consult a faculty member in History for specific recommendations. Usually it is recommended that you take lower division survey courses in the sequences History 13-14, and History 1-2-3, or History 4-5-6. History 1-2-3 and History 4-5-6 parallel each other, and if you take History 1 or History 4, you may not take the other, the same with History 2 and 5, and History 3 and 6.

The Department of English and Journalism and the Department of History and Political Science cooperate in administering the graduate program leading to the Master of Science degree in American Stud-
History 113

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 American Civilization. The rise of American civilization from colonization through the Civil War. Includes the political, economic, and cultural aspects of the colonial period, the era of the American Revolution, and the periods of national beginnings, westward expansion, sectional conflicts, and the Civil War. (5F, W, S) Ricks, Ellsworth

14. Modern American Civilization. Continuation of History 13. From the close of the Civil War to the present. Political, economic, and cultural aspects of American civilization during the periods and movements: Reconstruction, rise of industrialism, the last frontier, the agrarian revolt, imperialism, reform, and the World Wars. (5F, W, S) Ricks, Ellsworth

21. Latin America to 1763. Geography, pre-Columbian peoples, conquest and colonization by European powers, international rivalries, political, social, and economic developments. (3W) Ellsworth, Peterson

22. Latin America Since 1763. The Spanish-American revolutions. The growth and development of the Republics of Latin America and their role in the contemporary world. (3S) Ellsworth, Peterson

34. English History. From the earliest times to the present day. Particularly valuable for English majors and pre-law 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. (3S) Ellsworth

111. Medieval Europe. (500-1500 A. D.). Political, economic, social, and cultural developments during the Middle Ages. (3S) Brite

124. Renaissance and Reformation. (1250-1600). (5F) Brite

126. French Revolution and Napoleon. (1789-1815). (3S) 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 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. (3F) 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. (3F) Ricks

History of Asia

176. History of the Far East. Emphasis on China, Japan, and Russia since 1900. (3W) Brite

Seminars

190. Sources and Literature of History. European, Asian and American studies; theory and interpretations of history. For all persons preparing to teach or write history. Recommended to history majors in junior year. (2W) Ellsworth

193. Seminar in Historical Research. Basic techniques of historical research; exercise in writing original research paper. History 190 desired but not required as a prerequisite. Recommended to history majors in senior year. (3S) Ellsworth
114 College of Social Sciences

211. Thesis. Credit arranged. (F, W, S) Staff

229. Seminar. (3F, W, S) Staff

239. Readings and Conference in Special Areas. Credit arranged. (F, W, S) Staff

Political Science

If majoring in Political Science, you should 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

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) Anderson

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

110. Basic Problems in International Relations. Examines current international developments with emphasis on their relation to the United States. (3S) Merrill

111. International Government. 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

125. Political Parties and Practical Politics. Organization and practices of political parties. (3F) Harmon

126. Soviet Government and Politics. Designed to present the structure and functioning of Soviet government and the Communist party system. Attention is also given to the theoretical background of Communist 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. (3S) Anderson

129. Public Administration. Introduction to study of public administration. For students 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
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

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

Current Political Problems. You may take any quarter without the preceding quarter or quarters. If a lower division student, you must receive consent of the instructor. (2F, 2W, 2S) Merrill

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. (3W) Staff

Seminar in Political Science. Two a 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

Thesis. For graduate students preparing a master's degree thesis. Credit arranged. (F, W, S) Staff

Graduate Social Science Seminar. For graduate students in the social sciences. Programs and procedures devised by social science graduate students and department staffs. (1W) Staff

Some law schools admit only college graduates. Others admit students with lesser training. College graduation is recommended even though it may not be required for admission.

If you plan to enter law school, you should 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 School of Graduate Studies, in Main 182.

Following is 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 a member of the Political Science staff.

Requirements for Pre-Law Majors
American Institutes: 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 must be familiar with as many areas of human endeavor as possible. It is recommended that the Pre-Law student emphasize the following areas: English, American and European History, Literature, Psy-
116 College of Social Sciences

You should be a skilled typist and familiar with accounting procedures.

Social Science Courses

1. General Social Science. A basic general education course giving 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 emphasis on the social viewpoint. The influence of geography on domestic and international problems: cultural, ethnic and linguistic backgrounds, boundaries, population trends, national economic and governmental systems as they may reflect foreign policy. You 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

105, 106, 107. Geopolitics: Europe, Afro-Asia and The Americas. A survey of world geography, with emphasis on international "problem" regions. The cultural, background, language, race, religion, and technology of specific geographic areas will be examined to provide a better understanding of current tensions. (3F, 3W, 3S) Peterson

Department of Sociology and Social Work

Professor R. W. Roskelley, Head; Associate Professors T. R. Black, W. A. De Hart, C. Fredrickson, E. H. Lewis; Assistant Professor J. A. Pennock.

Office in Main 212

Sociology

As a major in Sociology you must, in addition to meeting the group requirements for graduation, complete a minimum of 47 credits in Sociology, distributed as follows: 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, 4 credits; Cultural Anthropology, 3 credits; Social Work, 9 credits; Population and Industrial Sociology, 3 credits.

Either Sociology 10 or 70 is a suggested prerequisite for all upper division courses in Sociology.

Graduate Study

The Department of Sociology and Social Work offers courses leading to the Master of Science and Doctor of Philosophy degrees. Research is promoted through departmental relationship with the Agricultural Experiment Station, with the Division of University Research, and with state and 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. Candidates for a degree are required to spend one year as a student in full time residence at some other university approved for study by the USU Sociology Department.

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**

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. (6F, W, S) **Staff**

75. **Effective Community Living.** A study of the community and of tools used to understand inter-personal 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.** Classroom analysis and field study of Utah social problems as they affect community living. (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.** Study of cultural and social determinants of personality growth and development, and the application of such knowledge to human relations problems emerging in our dynamic society. (3F) **DeHart**

141. **Rural Community Organization and Leadership.** Analysis of forces and procedures at work in developing community organization, with emphasis on techniques of training leaders to help make the community more effective. (3S) **Roskelley**

144. **Women Today.** Woman's relationship to men, to children, to employment, and her perception of herself in her several roles. (3S) **Fredrickson**

145. **Alcoholism.** See HPER 145. (3S) **Nelson**

153. **History of Social Thought.** Development of social thought from early periods to August Comte. From this point, important developments in Europe and America, with emphasis on American thought. (5W) **Roskelley**

154. **Population Problems.** The nature of population growth and decline in reference to international, national and local social problems. Significance of present population distributions, characteristics, and trends. (3W) **Pennock**

156. **Social Institutions.** Similarities and differences in life histories of institutions as they emerge, grow, and decline. Society's efforts to keep institutions attuned to the objectives for which they were organized. (3F) **DeHart**

158. **Human Relations in Industry.** Human relations skills and philosophy needed in modern-day management practices. Human factors influencing work behavior. (3S) **DeHart**

160. **The Family in Various Cultures.** Historical and institutional approaches to family functions; analysis of comparative family systems; family theory and ideological considerations. (3F) **Staff**

161. **Modern Social Problems.** Major American social problems. Adjustment to instruments of change as means of minimizing disorganization. (3W) **Fredrickson**

170. **Contemporary Sociological Theory.** Current sociological theories about the modern social world; changes and process. (3) **Black**


172. **Delinquency Prevention.** Modern philosophy and methods in early discovery of behavioral characteristics that lead to delinquency. Community and organizational programs for delinquency prevention. (3W) **Pennock**

173. **Treatment of Delinquency.** Origin and operation of the Juvenile Court. Detention, probation, placement, and institutional care, as methods of rehabilitation and correction. (3S) **Pennock**

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) **Pennock**

176. **Treatment of the Adult-Criminal.** Modern methods and philosophy in the treatment of the adult criminal in jails, prisons, and through probation, parole, and community services. (3F) **Pennock**

180. **Group Dynamics.** Group processes from the point of view of improving individual participation as members and leaders of groups. Social action as a group process. (3W) **DeHart**

190. **Seminar in Sociology.** Four hours required for majors in Sociology. (1F, W, S) **Staff**
118 College of Social Sciences

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 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. Reading 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. (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

211. 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

288. Practicum in Sociological Research. Supervised application of sociological research in field studies. Credit arranged. (F, W, S) Staff

Social Work

The demand for qualified Social Workers exceeds the supply. 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 1952, the graduate schools and undergraduate departments of Social Work joined forces with other segments of the profession to provide 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 graduate study in Social Work. More than 60 undergraduate departments of Social Work have been approved 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: Social Work 165, 173, 174, 175, and 12 hours of Social Work electives; Economics 127; Political Science 129; Psychology (6 hours selected from:) 105, 121, 123, 140, 161; Sociology (9 hours selected from:) 130, 141, 156, 160, 170, 172; Child Development 100.

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 Health. Problems in the prevention and treatment of mental illness and the maintenance of healthy individuals in a healthy society. (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. 173 and 175 concurrently. Whenever possible, take these prior to other Social Work 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.** 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 with special needs. (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. **Group Dynamics.** Group processes from the point of view of improving individual participation as members and leaders of groups. 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**

200. **Social Case Work I.** Principles and methods of social case work. Investigation, diagnosis, and treatment. (3F) **Lewis**

203. **Independent Readings in Social Work.** Readings and conferences on topics selected by the student. Credit arranged. (3F, W, S) **Staff**

240. **Community Organization.** Processes operating in rural and urban communities and development of means for coordinating 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. (3S) **Lewis**

170. **Child Welfare.** Evolution and current developments in programs for meeting needs of children: substitute parental care and adoptions, child labor laws, juvenile courts, problems of the child of unmarried parents, the handicapped child and the exceptional child. (3S) **Lewis**

287. **Methods of Social Research.** See Sociology 287. (3F)

---

*He that has no charity deserves no mercy.*
To fall is less shame than to remain fallen.
College of Education

John C. Carlisle, Dean
College of

Education

Department of Agricultural Education, 125

Business Education, 104
  (In College of Business and Social Sciences)

Department of Education, 126
  Teacher Education, 126
  Graduate Study, 129

Department of Fine Arts, 133
  Music, 133
  Theatre Arts, 137
  Visual Arts, 139

Department of Health, Physical Education and Recreation, 143

Department of Homemaking Education, 201
  (In College of Family Life)

Department of Industrial and Technical Education, 178
  (In College of Engineering)

Library Science, 150

Department of Psychology, 151

Bureau of Educational Research, 287

Degrees Offered:
  Bachelor of Science
  Master of Education
  Master of Science
  Doctor of Education
The College of Education has as its primary function the preparation of teachers, administrators, supervisors and other professional personnel for the public schools. The College consists of the Departments of Agricultural Education; Education; Fine Arts; Health, Physical Education and Recreation; Psychology; and a program in Library Science. In addition to offering majors and minors, each department offers courses contributing to general education as well as courses designed to supplement the major work of other departments in the University.

The College of Education is a member of the American Association of Colleges for Teacher Education and is fully accredited through the Master's Degree by the National Council for Accreditation of Teacher Education.

Application for admission to professional curricula should be made before the end of the sophomore year. Transfer students who have had one year of collegiate work may apply during the first quarter at USU.

Teacher Education. The University offers complete programs of teacher education in all phases of public school work. Cooperative programs with other departments of the institution provide for teaching majors and minors required of all prospective school teachers. Similarly, general areas of concentration in subject matter are required of all elementary teachers.

Careful attention is given to both staff and facilities in teacher education. Especially selected personnel at all training levels give students individual attention. Facilities in addition to the regular College of Education classrooms include the Nursery School, operated on the campus by the Department of Family Living and Child Development in the College of Family Life. Here teacher education focuses on the pre-school child. The Edith Bowen Teacher Education Laboratory School is a functioning elementary school on the University Campus. The teachers of the school are members of the University faculty. This school serves as a center for teacher education for those students preparing to teach Kindergarten and grades one through six. Here child
understanding and behavior are studied and desirable school practices are developed.

The University Council on Teacher Education coordinates all activities dealing with the preparation of teachers and other professional school personnel. Members of the council are appointed by the President of the University from the College of Education and other departments offering courses included in teaching majors and minors. The Dean of the College of Education serves as Chairman of the council.

The council is concerned with (1) development of teacher education curricula; (2) approval of all teacher education curricula; (3) election, admission, and counseling procedures for students entering teacher education programs; (4) graduation requirements and the recommendation of students for professional certification, and (5) the continued improvement of graduate programs in professional 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 students.

The University provides training to prepare 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.

As a valuable and integral part of teacher education for the elementary or secondary certificate, a closely supervised program of student teaching is conducted. In elementary education this student teaching is carried on in the Edith Bowen School, and in nearby public schools. In secondary education, all student teaching is done in selected public schools. Contractual arrangements are made for these services with the schools concerned.

The Bachelor of Science degree with a major in elementary or secondary education, is designed for the student preparing to teach in either of these fields. Those students majoring in other departments of the University who wish to prepare for teaching, are admitted to teacher education curricula as heretofore described.

On the graduate level, programs are offered for students who desire to meet requirements for administrative, supervisory, teaching or other advanced professional certificates. The MEd, MS, and EdD degrees are offered. More detailed information is presented in this catalog by the School of Graduate Studies obtained by contacting the Chairman of Graduate Study in Education.

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. If you qualify for teaching or other professional certificate you should register with the Service as a help in compiling the proper credentials to be used in placement. Registration should be completed in the winter quarter or early part of the spring quarter.
As a student preparing to teach vocational agriculture you will register in the Department of Agricultural Education. In the curriculum planned for preparing 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 education 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 you in selecting courses throughout your 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. If you plan to do graduate work you should select a coordinated program of study in the Colleges of Agriculture and Education.

Prescribed Course for Majors in Agricultural Education

<table>
<thead>
<tr>
<th>Biological Science:</th>
<th>Cr. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botany 24(^1)</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 3(^1)</td>
<td>5</td>
</tr>
<tr>
<td>Zoology 112 (Genetics)</td>
<td>5</td>
</tr>
<tr>
<td>Bacteriology 10 or 70, &amp; 71(^1)</td>
<td>5 20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Language and Arts:</th>
<th>Cr. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Planning (^1)</td>
<td>3</td>
</tr>
<tr>
<td>Speech, or Music,(^1) or Art or Literature (^1)</td>
<td>5 8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>English</th>
<th>Cr. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Communications 1, 2, 3</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Sciences:</th>
<th>Cr. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociology 10 or 70(^1) or Political Science 10(^1) or History 14(^1)</td>
<td>5 10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exact Science:</th>
<th>Cr. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 10, 11, 12(^1)</td>
<td>15</td>
</tr>
<tr>
<td>Mathematics 34(^1)</td>
<td>3</td>
</tr>
<tr>
<td>Physics 3 or 6 or 7, Geology 3 or Math. 35</td>
<td>4 22</td>
</tr>
</tbody>
</table>

| Total | 69 |

Basic and Minimum Requirements in Agriculture, Agricultural Engineering, and Education

<table>
<thead>
<tr>
<th>Animal Industry:</th>
<th>Cr. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>An. Hus. 10</td>
<td>5</td>
</tr>
<tr>
<td>Elective</td>
<td>15 20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plant Industry:</th>
<th>Cr. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agron. 56 (Soils)</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>16 20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agricultural Economics:</th>
<th>Cr. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agr. Econ. 71, 72, 73</td>
<td>9</td>
</tr>
<tr>
<td>Elective</td>
<td>3 12</td>
</tr>
</tbody>
</table>

| Agriculture: | Elective | 8 8 |

<table>
<thead>
<tr>
<th>Agricultural Engineering:</th>
<th>Cr. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrig. 10</td>
<td>4</td>
</tr>
<tr>
<td>Ag. Eng. 1, 101, 102, 103</td>
<td>20 24</td>
</tr>
</tbody>
</table>

| Total | 84 |

<table>
<thead>
<tr>
<th>Education:</th>
<th>Cr. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education 112, 114, 124, 125, 126</td>
<td>22</td>
</tr>
<tr>
<td>Psychology 100, 102</td>
<td>6</td>
</tr>
<tr>
<td>Public Health 155 (or 154—3 cr.)</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>3 35</td>
</tr>
</tbody>
</table>

| Total Minimum Requirements | 194 |

For B.S. Degree

| Institutional and General | 69 |
| Agriculture               | 84 |
| Education                 | 35 |
| Military Science or P.E.  | 6  |

| Total                    | 194 |

\(^1\)Courses which meet lower division group requirements.
126 College of Education

Ag Education Courses


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. (8F) Richardson

125. Methods of Teaching Agriculture. Fundamental principles and practices of teaching. Special attention is given to selection, organization, and teaching agriculture and supervision of agricultural activities on the farm. (5W, S) Richardson

126. Directed Teaching in Agriculture. You will observe and teach under supervision in approved local vocational agriculture departments. You will leave the campus to teach for five or six weeks. (4-8W 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. (3S) Extension Staff

225. Special Problems in Agricultural Education. A consideration of needs and special types of service in FFA, Young Farmer and Adult Programs. For upper division and graduate students. (2-5F, S) Richardson

Department of Education


Office in Main 181

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
C. D. Burke, Chairman

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.

You should take Introduction to Education (Education 50) in the sophomore year. During this class, guidance tests and other selective admission tests are administered. Upon written recommendation of your adviser, you may be excused from taking Education 50, but you must take the selective admission tests.

You are not permitted to enroll in professional courses in education unless officially approved by the admissions committee, nor will you be admitted to student teaching in either secondary or elementary education unless your total grade point is 2.0 or above, and your grade point average in the teaching major and minor and professional certification subjects, 2.5 or above. You should be financially prepared
to spend a quarter off campus student-teaching.

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: See University lower division requirements.

(2) Teaching Majors and Minors. Thirty credit hours in one field of concentration or eighteen hours in each of two fields. Courses for the major fields of concentration or the two minors may be selected from the fine arts, language arts, social sciences, physical and life sciences, physical education, child development, or psychology.

(3) A major of 45 hours in professional education as follows:

Required Courses

GROUP I Understanding the Child (minimum of 9 credits)
Psychology 100 or C.D. 100........ 3
Public Health 155 (or 154, 3 cr.) 4
Two additional hours selected from Psychology 181, 182, 183, 123, 145, Speech 167, Child Development 67, 68.

GROUP II Understanding the School (minimum of 7 hours)
Education 103 .................. 4
Education 114 .................. 3

GROUP III Curriculum and Methods and Student Teaching (minimum of 23 hours)
Education 104 .................. 5
Education 105 .................. 3
Education 106 .................. 12
Psychology 108 .................. 3

Selective Courses (Minimum of six hours)

Education 102 .................. 3
Education 107 .................. 3
Education 108 .................. 3
Education 109 .................. 3
Education 110 .................. 3
Education 133 .................. 3
Education 136 .................. 3
Education 159 .................. 3
Education 161 .................. 3
Education 182 .................. 3
Psychology 127 .................. 3
Psychology 161 .................. 3
English 122 .................. 3
Music 150 .................. 3
Art 151 .................. 3
Phys. Ed. 177 .................. 3
Phys. Ed. 182 .................. 3

Suggested Sequence of Courses

First and Second Years
Concentrate on filling lower division requirements, and beginning work in the major or minor fields.
Education 50

Third Year
Psychology 100
Public Health 154 or 155
Education 103
Education 114
Courses to fill your major field of concentration or your two minors
Electives in education and related areas

Fourth Year
Psychology 108
Education 104
Education 105
Education 106
Courses to complete your major field of concentration or your two minors.
Elective courses in education and related areas.

Kindergarten Certification. Having completed the requirements for the elementary school certificate, you may obtain the kindergarten
certificate by completing Education 133 and 106a. Application for 106a must be made at least one quarter in advance.

**Dual Certification.** A student desiring to obtain both the elementary and the secondary certificates should consult with an advisor in the Education Department early in his program. Ordinarily, dual certification will require at least one additional quarter of work.

**The Program in Secondary Education.** To obtain the Bachelor of Science degree in secondary education and qualify for the Utah Teacher’s Certificate for secondary schools, you must meet the following minimum requirements:

1. **Courses designed to provide a liberal background:** See University lower division requirements.
2. **Teaching Major and Minor.** A teaching major of not fewer than 36 credits, of which 15 must be Upper Division, and a teaching minor of not fewer than 20 credits, must be completed. In lieu of a teaching major and minor, a composite teaching major consisting of not fewer than 60 credits in two or more related subjects may be selected. The teaching major and minor or courses in the composite teaching major must be in specific subjects taught in Utah secondary schools. Courses required or recommended are agreed upon by the various subject departments and the Department of Education.

If you choose a teaching major and minor, you may graduate in either the department offering that major or the Department of Education. If a composite major is chosen, you usually major in the Department of Education. Regardless of the department in which you major, you must apply and be granted permission to enter the teacher education program by the admissions committee of the Department of Education. It is advisable to make this application as early as possible in your college program because you will not be admitted to any course in the professional curriculum without first having been approved by the admissions committee.

3. **Professional courses in education.** For a Utah Teacher’s certificate for secondary schools you must complete 33 required hours, and if majoring in secondary education, an additional 3 hours. The professional courses are to be taken in the various divisions as follows:

**Required Courses**

**GROUP I. Understanding the Pupil** (minimum of 9 credits)
- Public Health 154 (or 155—4 cr.) 3
- Psychology 100 3
- Psychology 102 3

**GROUP II. Understanding the School** (minimum of 6 credits)
- Education 111 3
- Education 114 3

**GROUP III. Student Teaching, Methods and Curriculum** (minimum 15 credits)
- Education 127 3
- Education 129 5
- Education 130 4
- Education 115 3

In addition you are required to take the special methods class listed in your major field and are encouraged to take the one in your minor field: Education 118, 124, 151; Physical Education 120, Speech 123; Mathematics 150; Music 151, 152, 153; Secretarial Science 179, 180 3
Dual Certification. A student desiring to obtain both the elementary and the secondary certificates should consult with an advisor in the Education Department early in his program. Ordinarily, dual certification will require at least one additional quarter of work.

Elective Courses

You may also elect additional courses in each of the three groups listed above. These courses are included on the sheet listing certification requirements for teaching in secondary schools, which may be obtained from the Department of Education.

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 130.

Homemaking, Industrial Arts, Agriculture. If you wish to major in Homemaking Education, Industrial Arts Education, or Agricultural Education you should consult the professional education requirements listed under these departments.

Graduate Study

Elvert H. Himes, Chairman

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 Chairman of Graduate Program in 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) Burke, Jackson

104. Elementary School Curriculum. Familiarizes prospective teachers with the nature and content of the elementary curriculum and factors that influence its development. Includes 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) Burke, Pugmire, Shaw


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. Application for student teaching should be arranged two quarters in advance of registration for student teaching. 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, Wiggins, and Supervising Teachers
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, S) 
Budge

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, W, S) 
Pugmire and Supervising Teachers

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, Burke

109. Science in the Elementary Grades. Investigation of the aims of science programs, Acquaintance with the materials, techniques of instruction, and experiences that may help children gain the skills, understanding, and attitudes desirable in this subject area. (3S) 
MacCurdy

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. (3F, W, S) 
Carlisle, Drake

112. Principles of Guidance. Emphasis given to organization of guidance as a service, including individual and occupational differences, tests, measurements, and counseling. (3F, W, S) 
Cameron, Hines

113. Organization and Administration. Fundamental principles of operating public schools with emphasis on Utah conditions. (3F, W, S) 
Hansen, Jacobsen, Stokes

114. 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

115. 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, S) 
Budge

119. Extra-curricular Activities. Designed to acquaint prospective teachers and administrators with extra-curricular programs in secondary schools, and the place of such activities. (3S) 
Drake

124. The Teaching of English. Consider 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 the problems arising during student teaching. Discusses planning, teaching procedures, adapting classroom practices to individual differences, testing, and evaluation. To be taken during the same quarter as Education 129 and 130. (3F, W, S) 
Budge, Hatch, MacCurdy

129. Student Teaching in the Secondary School. Must be taken concurrently with Education 127 and 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 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) MacCurdy, Hatch, McClellan, Budge

Hatch, McClellan, Budge, MacCurdy

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) 
Hines

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 prerequisite or should be taken concurrently. (3W) 
Sharp
133. Curriculum and Methods for Kindergarten. The study of the kindergarten program with emphasis on the influence of recent research in child development and human relations. Special attention will be given to planning the curriculum, methods, materials, and equipment used in the kindergarten. (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. (3S) Budge

139. Modern Practices in the Teaching of Reading. In addition to a concern for an adequate developmental reading program, major emphasis will be placed on helping the child who is having reading difficulties. For both the elementary and secondary teacher. (3Su) Staff

141. Social Foundations of Education. The social significance of current educational theories and practices. (3W) Hansen

142. Remedial Reading. A course designed for teachers, remedial teachers, supervisors, and others interested in the reading process. It emphasizes the developmental sequence in reading, with study of evaluative devices to determine the place of the student in the sequence, and gives suggestions for remedial work. Education 107 is recommended prerequisite. (3Su) Stone

150. Teaching Science in Secondary Schools. Aims and objectives of science education in the secondary schools and the development of curriculum materials to achieve these aims. Class members develop teaching units in sciences taught in the secondary school. (3W, Su) MacCurdy

152. Utilizing Community Resources in Science Education. Ways of utilizing community resources, natural, industrial, resource persons in providing science experiences. The organization of science clubs, seminars, honor groups, fairs, science talent searches, contests and similar special activities. (3S, Su) MacCurdy

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. (3 or 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 Materials. Studies the building of a program in which the newest materials and techniques are utilized. Preparation of audio-visual material. (3F, W, S) Drake

202. Philosophy of Education. An analysis of the major philosophies of education and their implications for current educational practices. (3F) Hansen

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) Hansen

204. Elementary School Curriculum. An advanced course in elementary school curriculum for graduate students, including experienced teachers, supervisors, and administrators. (3W) Burke, Shaw
132 College of Education

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) Jacobsen

208. School Supervision. Principles and practices of school supervision, including qualifications and responsibilities of supervisors of instruction. (3S) Burke


213. Organization and Administration of Guidance. (See Psychology 213.) (3S) Himes

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. (2F) Jacobsen

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) Carlisle, Stokes

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) Hatch

225. Characteristics and Education of the Gifted Child. A study of the characteristics, means of identifying, guidance, and education of the gifted child. Emphasis is placed upon problems of teaching and guidance. Attention is also focused upon personality development and the societal roles of these children in the elementary and secondary schools. You have opportunity to develop resource units and special projects in various curriculum areas for the gifted child. (3S, Su) MacCurdy

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 certificates 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, Himes

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) Burke, 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) Himes

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 you in developing and perfecting your thesis research plan. Also provides practical research experience and insight through conducting a class research project. 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, 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) Stokes

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. Credit arranged. (F, W, S) Himes

302. Readings in Foundations of Education. Considers problems of education in terms of their sociological, historical, and philosophical foundations. (3W) Hansen

322. Administration of School Personnel. Principles and practices in management of teachers and students. (3S) Jacobsen

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) Jacobsen, Stokes

375. Field Studies and Thesis. Individual work on research problems in the EdD program. 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) Stokes

**Department of Fine Arts**

(Music, Theatre Arts, Visual Arts)


**Office in Main 328**

The Department of Fine Arts is comprised of Music, Theatre Arts, and Visual Arts. It has a threefold 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 you to teach the arts in the elementary and secondary schools and participate in other professional endeavors in the arts. (3) It offers graduate studies designed to deepen artistic insight and to qualify you 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 which meet lower division or general education requirements in Language Arts; (2) provides courses that further increase understanding and appreciation of music and develop particular skills; (3) provides specific sequences of courses leading to the Bachelor's and Master's degrees in music and music education.

**Music Education Major.** Required courses for a major in music education are in the following divisions: (1) *Music Theory*—24 hours; Music 4, 5, 6, 104, 105, 106, 107; (2) *Music History and Literature*—9 hours: Music 101, 102, 103; (3) *Music Education*—15 hours: Music 140, 141, 151, 152, 153; (4) *Applied Music*—As a Music education major you shall
demonstrate adequate performance skill vocally or instrumentally and will be required to appear in two public recitals, the first before the end of the Junior year, the second in the Senior year. It is therefore recommended that individual instruction be taken all four years. Group instruction in piano, strings, brass, percussion, woodwind and voice will be recommended from the following: Music 80, 81, 82, 83, 84, 85. (5) Ensemble Performance—A minimum of six hours selected from the following: Music 25, 125, 26, 126, 27, 127, 28, 33, 133, 36, 136, 42, 43, 44, 45, 56, 135, 137, 138, 139.

Music Major. Required courses for a major in music are the same as the foregoing with the following exceptions: (1) Music 80, 81, 82, 83, 84, 85, 151, 152, and 153 are not required; (2) Music 108 and 109 are required; (3) if majoring in Piano you are required to take 180, 181, 182; if an instrumental major you should take 185, 186; if a Vocal major you should take 134, 183, and 184.

A program of individual study will be outlined by the major professor; you shall give an individual graduation recital, preferably in your senior year.

All music and music education majors are required to attend all recitals and musical concerts sponsored by the Fine Arts Department.

Graduate Study

A Master of Science degree may be earned in Music 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 an 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 covers music history, literature, theory, 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.

Twenty-five hours of music credit beyond the bachelor's degree will be recommended by the advisor. Of these, the following courses are required: Music 258, 3 hours; Music 259, 3 hours; Music 280, 3 hours. You may elect additional credit from the following: Aesthetics; Music 201, 3 hours; Music 205, credit arranged, and any upper division courses recommended by the advisor.

You may 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 the same as those for Music Education, with these 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 Seminar, 3 hours; private instruction, 6 hours; ensemble performance, 3 hours. Six hours of credit will be given for the thesis, lecture recital or music recital. You are encouraged to take other elective courses most helpful to your individual situation.

Music Courses

History Appreciation and Literature

1. Enjoying Music. Designed to increase understanding and enjoyment of music through studying and hearing selected compositions in all musical forms. (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 Romanticism; 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. A listening course designed to present piano music for the general student as well as the trained musician. Fall quarter: music written for the piano to the time of Beethoven; winter quarter: to early Romanticists; spring quarter to contemporary composers. 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 great opera literature. (2S) Welti

*184. Sacred Music. Evolution of cantata and oratorio and consideration of modern hymns and sacred music. (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. (3F) Galos

*186. Chamber Music. An analysis of chamber music forms and their development, including sonata literature. (3W) Galos

*201. Introduction to Musicology. Designed to lay the foundation for broad philosophy of music through a study of music acoustics, aesthetics, sources of music literature, and principles of music pedagogy. (3W) Staff

280. Seminar in Music Literature. A graduate course designed to give a survey of important musical literature and vital source material for its study. (3S) Staff

Theory and Composition


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) Staff


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 and orchestra. (3W) Dalby

108. Counterpoint. Writing music in 16th century contrapuntal style. (3W) Dalby

*109. Form and Analysis. A study of musical form in both homophonic and contrapuntal styles through analysis of examples taken from music literature. (3F) Staff

111. Composition. Projects in creative composition for more advanced students. Taught alternate years. Prerequisites: 106, 107, and 109. (3S) Staff

259. Seminar in Music Theory. A study of the practical aspects of musical theory as related to analysis, pedagogy and composition. (3F) Dittmer

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

*Taught alternate years.
136 College of Education

27. University Band. 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. Prerequisite: ability to play a wind or percussion instrument. (2F, 1W, 1S) Dittmer

33, 133. Choir. Singing good choral literature. Regular attendance is a condition of membership. A public performance closes each quarter’s work. (1F, 1W, 1S) Dittmer

135. Opera Staging and Production. For those who have a role in the opera or work on the production staff. (1 to 4W) Welti

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

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) Welti

138. Meistersingers. A selected group of men singers. Admission by audition. Auditions are conducted at first and second rehearsals or by appointment 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) Staff

45. Woodwind Ensemble. A study of the literature for woodwind quintet and other small groups. (1F, 1W, 1S) Welti

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) Welti

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) Welti

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

163. Piano Workshop. An intensive course for advanced piano students and piano teachers. Includes lectures on basic harmony, piano techniques, memorization, building repertoire, and teaching materials. (1Su) Wassermann

205. Special Problems in Music. An advanced course designed to meet specific problems of the music educator. (1 to 3S) Staff

221a. Woodwind Clinic. An intensive study of the woodwind instruments, with recommended methods of teaching. Daily, July 11-22. (1 Su) Staff

221b. Brass Clinic. An intensive study of the brass instruments with recommended methods of teaching. Daily, July 11-22. (1 Su) Staff

221d. Percussion Clinic. An intensive study of the percussion instruments with recommended methods of teaching. Daily, July 11-22. (1 Su) Staff

251. Advanced Choral Methods. Rehearsal techniques and materials to use with the secondary school choir. The study of phonetics and its relation to good choral sound. Teachers registering for this class are expected to sing in clinic chorus. Daily, July 11-22. (1Su) Staff

252. Advanced Orchestral Methods. Techniques of training the school orchestra. A consideration of special problems relating to the string instruments. Teachers registering for this class are expected to play in the clinic orchestra. Daily, July 11-22. (1Su) Staff

253. Advanced Band Methods. Techniques in training the band. Private consultation on problems in rehearsal techniques, public relations, etc. Teachers registering for this class are expected to play in the clinic reading band. Daily, July 11-22. (1Su) Staff
258. Seminar in Music Education. Teaching and administration of various phases of the music program. Special projects. (3W) Dalby

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, upon permission of the instructor.

Class instruction is given for beginners, instrumental and vocal. Designed for music education majors, who must be qualified to teach all instruments and voice.

80. Group Piano Instruction. (IF, 1W, 1S) Staff
81. Group Vocal Instruction. (1F, 1S) Dittmer, Welti
82. Group Woodwind Instruction. (1W) Dalby
83. Group Brass Instruction. (1S) Dalby
84. Group String Instruction. (1F, 1S) Galos
85. Group Percussion Instruction. (1F) Dalby
60, 160. Individual Piano Instruction. Staff
62, 162. Individual Organ Instruction. S. E. Clark
64, 164. Individual Vocal Instruction. Dittmer, Welti
70, 170. Individual Woodwind Instruction. Dalby
72, 172. Individual Brass Instruction. Dalby
74, 174. Individual Violin and Viola Instruction. Galos
75, 175. Individual Cello Instruction. Pahtz

The following additional persons have been approved by the University Music staff to give private instruction for University credit: Jeannie T. Welti, Lucy L. Christiansen, Thelma Lundquist, Laverne Odd and Ray Haslam.

University practice studios are available for 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 theatre activities are designed to help you prepare for a teaching career in Theatre Arts, to specialize in Theatre, or to prepare for advanced study.

Forty-five to fifty credit hours of work in Theatre Arts, Speech, and Dramatic Literature are required for the teaching or non-teaching major in Theatre Arts. A detailed list of requirements may be obtained from the department office.

Special curricula may be arranged for you to take a composite major combining courses in Theatre with work in another department or division as Speech, English, Visual Arts, or Music. Sixty credit hours are required for the composite major. Ordinarily such a major can be completed in four college years. If you desire to complete a composite major in Theatre Arts and another division or department you should arrange your program with the advisers assigned to you by the heads of the departments concerned.

For a minor in Theatre Arts a minimum of eighteen credit hours is required, including three hours in FA-TH 1. Other courses to meet your needs are to be selected with the aid of your adviser. For the teaching minor in Theatre Arts twenty to twenty-four credit hours are required.

Utah State Theatre. An important aspect of the Theatre Arts division is the Utah State Theatre, which produces a number of plays each year. As a major or minor in Theatre Arts you are required to participate in these productions by acting, or assisting in the staging, lighting and managing of the various dramatic presentations.

Graduate Study

Theatre Arts offers advanced course work and seminars leading to the Master of Science degree with a major in Theatre Arts. During your first quarter of residence, and before admission to
candidacy for the Master of Science degree, you 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 you demonstrate before a departmental committee your competency in voice and diction, extemporaneous speaking and interpretative reading or acting. The results of these diagnostic inquiries are used to assist you and your faculty adviser in planning a complete program of study and in selecting the thesis subject or project.

As a candidate for the Master of Science degree in Theatre Arts you may, with the approval of your supervisory committee, elect to write a thesis or you 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, you 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 playwrights, actors, directors, designers, technicians, and of theatre buildings. Readings, recordings, pictures, and actual performances are utilized. (3F, 3S) Staff

10. Drama Appreciation. A study of dramatic forms (tragedy, comedy, melodrama) and theatrical styles such as realism, romanticism, symbolism and expressionism. (3W) Morgan


130. History of the Theatre. Historical survey of the evolutionary processes in the theatre from ancient to modern times. Actors and acting methods, stages and production effects, etc. are studied. (3F) Call

Performance

20. Voice for Theatre. Vocal development in preparation for actual dramatic performances. 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 acting. (3F) Call

46. Intermediate Acting. A continuation of FA-TH 44, with emphasis on characterization and the development of the actor's physical, mental, and emotional resources. (3W) Call

55, 57, 59. Dance for Theatre. Body movement designed for the needs of the actor. Emphasis on the creative approach to movement as it is utilized to project character, emotion and mood. (1F, 1W, 1S) Staff

124. Theatre Workshop. 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

144. Advanced Acting. Emphasis on the creative approach to acting, analysis and creation of the role and ensemble playing. (3S) Call

146. Directing. Theory and practice of the principles of stage directing. (3S) Call

148. Private Instruction. Individual tutoring to develop competence in voice, acting, directing, scenic and costume design. Special fee. Credit arranged. (F, W, S) 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 theatres. (1F) Morgan


*Taught alternate years.
56. **Puppetry.** The design, construction, and manipulation of puppets. Recommended particularly for elementary teachers. (3W) Reynolds

105. **History of Costume.** (See College of Family Life. (3F) Reynolds

150. **Scene Design.** Application of basic principles of design to the stage setting. Development of scenic designs through color sketches, plans and models. Practice in scene painting techniques. Survey of the history of stage decoration. (3W) Morgan

152. **Stage Costuming.** Fundamentals of pattern drafting, construction of stage costumes and accessories, organization and care of costume wardrobes. (3F) Gade

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-TH 58, or consent of instructor. (3S) Gade

154. **Stage Lighting.** Study and application of the principles of stage lighting. Practice in planning the lighting for a play, mounting instruments and in the operation of control boards. (2W) Gade

156. **Theatre Organization and Management.** Study of the managerial aspects (organization, promotion, financing) of the educational and community theatres. (2S) Call

158. **Creative Dramatics.** Guidance of children in the creation of scenes and plays with improvised dialogue and action. Application of creative dramatics to the classroom situation. Recommended for prospective elementary school teachers. (2S) Call

190. **Problems in Drama.** Selected research problems of merit and of mutual interest to students and instructors are investigated. Credit arranged. (F, W, S) Staff

192. **Projects in Theatre.** Advanced work in acting, directing, scene design, costume design, makeup, costume construction, lighting, technical practice, 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. (F, W, S) Staff

194. **Problems of Drama Directors.** Play selections, 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. (2 to 5F, W, S) Staff

*196. Advanced Directing.** Practice in stage direction. The student selects, casts, directs, and presents short plays and scenes. Prerequisite: FA-TH 146. (3F, 3S) Staff

200. **Seminar in Drama.** Intensive study of special problems in drama and theatre. Credit arranged. (F, W, S) Staff

202. **Research Studies.** Advanced research in drama and theatre. By permission of instructors. Credit arranged. (F, W, S) Staff

204. **Thesis.** Credit arranged. (F, W, S) Staff

292. **Advanced Projects in Theatre.** In any branch of theatre art. Credit arranged. (F, W, S) Staff

---

**Visual Arts**

To the student body in general Visual Arts offer (1) Courses which meet requirements in language arts; (2) Elective courses designed to increase appreciation of art and to satisfy avocational interests.

Visual Arts offer curricula leading to the Bachelor of Science degree in Art Education and in Applied Design. Majoring in Art Education, you may specialize in any of the following areas of concentration: Drawing and Painting, or Applied Design which allows specialization in Ceramics, Metalsmithing, Textile Design, Advertising Design and Illustration, Sculpture, Print Making and Graphic Art, and Interior Design. Majoring in Applied Design you may specialize in Advertising Design and Illustration, Ceramics or Metalsmithing, Drawing and Painting, or Interior Design. As a major in Art Education you must choose a minor in a department other than Art. This is also recommended for majors in Applied Design.

The Fine Arts Department reserves the right to retain student work in Visual Arts for temporary or permanent exhibition.

*Taught alternate years.
A list of 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's degree in any of the following three fields: (1) Drawing and Painting; (2) Applied Design, which comprises Ceramics, Metalsmithing, Textile Design, Illustration and Advertising Design, Graphic Arts, Interior Design; (3) Art Education.

To become a candidate for the master's degree you must pass the qualifying examination given by the School of Graduate Studies. In addition, a portfolio of art work must be presented to the Visual Arts staff for its consideration. The art faculty will determine whether you will be required to take certain courses to correct any apparent deficiencies. Credit in such courses cannot be counted toward the master's degree. As a master's degree candidate you select, with the aid of the department head and a graduate committee, a study program and a thesis project.

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. A maximum of nine credits of graduate work completed at another approved Graduate School may be allowed toward the Master's degree. Your graduate committee shall determine whether all or what portion of nine hours will be accepted. 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 project, for which you can receive a maximum of nine credits. Your thesis project is selected and approved during the first quarter. You can register for no more than three hours of thesis credit per quarter. A written and illustrated record must be kept of the progress on the thesis project. You must pass an oral examination on this thesis project. Three final copies of the written and illustrated thesis project must be prepared. One is for the University library, one remains in the Fine Arts department, the other is returned to you. At the time of graduation you design a comprehensive exhibit of all your graduate work. The thesis project should be an important part of this display.

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. Through use of visual aids, artists and their enduring works are discussed and observed: Primitive, classical, medieval, renaissance, neoclassical, the important schools of modern art, and contemporary works. (3F, 3W, 3S) Reynolds

10. Analyzing Contemporary Painting. There are many kinds of “Modern Painting” because artists are highly individual and they strive to achieve different purposes. A text and other illustrative materials are used to help you understand contemporary trends in art. (3F, 3W, 3S) Tippetts

Metalsmithing

11. Introductory Art Workshop. A sampling of various creative media in both two and three dimensions are explored. (3F, W, S) Wright
19. Introduction to Metalsmithing. Design and production of objects in nonferrous metals, using the basic techniques of metalsmithing. Emphasis on raising and fabricating metal hollowware in conjunction with the various technical means to that end: Sawing, filing, soldering, buffing, etc. Prerequisites: FA-A 5, 6, 7. (3F, W) Wright


120. Jewelry Casting. Continuation of FA-A 20. Introduction of centrifugal investment casting, using wax as the creative medium. Original design of various types of jewelry; techniques necessary for the completion of the metal product. Prerequisites: FA-A 20. (3F, S) Wright

Basic Design

5. Beginning Design. Introduces the basic art elements and is comprised of projects largely in two dimensions. Required of Visual Arts majors. (3F, 3W, 3S) Staff

6. Three Dimensional Design. Composition of spacial volume with points, lines, planes and color, and shapes with color and texture. Also sculptural experience with handles, stabiles, and mobiles. Prerequisite: FA-A 5. (3W) Wright

7. Design Projects. Introduction of the potential and limitations of various creative media. Design and work with metal, wood, leather, etc. Prerequisite: FA-A 6. (3S) Wright

135. Color. Color as a design element in stage lighting, painting, and everyday 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 prerequisite to all other painting courses. (3F, 3W) Larson


111. Watercolor and Related Media. Experimental approaches in the use of transparent watercolor, casein, and gouache. Part of the quarter is devoted to work in the studio and part outdoors working directly from nature. Prerequisites: FA-A 8, 14. Must be taken simultaneously with Art 127. (3F, 3S) Lindstrom

112. Portrait Painting. Problems of portrait painting. Any media may be employed. Prerequisites: FA-A 8, 14. (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, 3S) 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

21. Lettering and Layout. Elementary and advanced pen and brush lettering. (3F, 3W, 3S) Thorpe

27. Art Photography. Means of producing fine photographs. (3F) Reynolds


29. Art Photography. Introduction to color, 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 design. (3S) Thorpe

121. Advertising Design and Illustration. Theory of designing the cover, page, package, letterhead and poster. Basic techniques in illustration. The course trains the student in producing professional advertising and illustrating art which would enable him to find employment in this field. Desirable prerequisite: FA-A 21. (3W, 3S) Groutage

125. Printmaking. The study of wood cut, serigraph, etching, and lithography as basic techniques for printing multiple original works of art. (3F, 3W, 3S) Groutage
142 College of Education

Interior Design

40. Essential 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. (applied) Projects in creating original designs and applying them to suitable textiles in techniques of silk screen printing, free-hand painting, block printing, stencil or batik. Desirable prerequisite: FA-A 5 (3F) Larson

116. Fabric Design (structural) Projects in creating original designs and reproducing them in hooked rugs, upholstery fabrics, wall hangings, etc., and in various dramatic hangings and covers done in creative embroidery. Desirable prerequisite: FA-A 5 (3W) Larson

140. Applied Interior Design. Practical application of art elements and principles of design to problems of home decoration and furnishings. Prerequisite: FA-A 40. (3F, 3S) Larson

141. Advanced Problems in Interior Design. Experimental projects in home planning and furnishing. Prerequisites: FA-A 40, 140. (3S) Larson

166. Advanced Fabric Design in Weaving. Advanced, original design projects employing the weaving process for producing wall hangings, rugs, drapery, upholstery and clothing fabrics, etc. Prerequisites: FA-A 115 or 116 and CTRA 141. (3S) Larson

Art Education

50. Art for Young Children. For child development majors, mothers, kindergarten and first grade teachers. (3F) 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: FA-A 5 and 6 or 14. (3) 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

155. Music Handicrafts. A workshop course in the construction and study of easily played and informal musical instruments from those of the rhythm band to instruments of adult appeal and of commercial quality. All instruments are simple in construction, and utilize inexpensive and easily obtainable materials and tools. You have a choice of patterned instruments from more than 65 models, or you can develop your own ideas. No previous musical training is necessary. (3 to 5 Su) Staff

Special Studio

Art 171 and 271. Special Studio Courses. Individual work in any one or more of following, as approved by the instructor concerned: Design Studio, Painting Studio, Printmaking Studio, Sculpture Studio, Experimental Media Studio, Metalsmithing Studio, Ceramics Studio. Credit arranged. (F, W, S) Staff

272. Art Research, Seminar and Thesis Problems. Credit arranged. (F, W, S) Staff

Ceramics

30. Introduction to Ceramics. Beginning course in ceramics. Techniques of throwing, slab and coil building, carving, pinching. Introduction to the complete ceramic process, through the use of films, slides, and lecture. Desirable prerequisites: FA-A 1, 5. (3F, 3W, 3S) Staff

31. Ceramics. Emphasis on the use of the potter's wheel. Design and experimentation are stressed. Introduction to glazing techniques, kiln stacking and firing. Prerequisite: FA-A 30. (3F, 3W, 3S) Staff

130. Ceramic Glazing and Decorating. Explores the many ways of using various types of glazes in conjunction with decorating techniques. Ceramic studio operation and care. Prerequisites: FA-A 30, 31. (3F, 3W, 3S) Staff

131. Glaze Calculation. Calculation of glaze formulas; operation of the kilns. Prerequisites: FA-A 30, 31, 130. (3F, 3W, 3S) Staff

160. Ceramic Sculpture. Creative expression in a variety of plastic media. Emphasizes aesthetic employment of form and the technique of terra-cotta sculpture. (3S) Groutage

What you build easily will fall quickly.
In the activity courses opportunity is given 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 must take Physical Education activity courses any six quarters. Classes are selected by the student. No course can be repeated for credit.

Men must take either Physical Education, Military Science or Air Science. Numerous courses in aquatics, dual, team, individual and outing activities are offered each quarter in P.E.

Intramural Activities are conducted by the department. The intramural program is planned to give moral, social, physical and educational values derived from competitive sports. 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 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 men are encouraged to participate in one of these leagues.

Recreation. The department attempts to meet your recreational 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 various recreational activities after college. Clubs are organized in a variety of activities so that this purpose can be realized. These clubs include 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

Office in Fieldhouse

The Women's Intramural Association offers a varied program of activities. All women 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 men are encouraged to participate in one of these leagues.

Recreation. The department attempts to meet your recreational 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 various recreational activities after college. Clubs are organized in a variety of activities so that this purpose can be realized. These clubs include 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

Office in Fieldhouse
Recreation. You may specialize in any of the following areas: Physical Education, Elementary Physical Education, Secondary Physical Education Certification, 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:

As a Non-certifying Physical Education major you 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.

If majoring in Elementary Physical Education you should complete Physical Education 24, 55, 75, 81, 83, 84, 85 or 92, 106, 107, 108, 183, 184; six credits in Sports Techniques and six credits from approved electives.

Secondary Physical Education Requirements

### MEN

**Course** | **Credit** | **Credit** | **Credit**
---|---|---|---
F | W | S

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.E. 20, 21, 22</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P.E. 75</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>P.E. 17A</td>
<td>Any Quarter</td>
<td></td>
</tr>
<tr>
<td>Group Req.</td>
<td>All Quarters</td>
<td></td>
</tr>
<tr>
<td>Minor</td>
<td>Any Quarter</td>
<td></td>
</tr>
<tr>
<td>Eng. 1, 2, 3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

### WOMEN

**Course** | **Credit** | **Credit** | **Credit**
---|---|---|---
F | W | S

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.E. 120, 121, 122</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>P.E. 106, 107, 108</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>P.E. 185, 189, 190, or 180</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>P.E. 130</td>
<td>Any Quarter</td>
<td></td>
</tr>
<tr>
<td>Ed. 111, 114</td>
<td>Any Quarter</td>
<td></td>
</tr>
<tr>
<td>Psy. 100 and 102</td>
<td>Any Quarter</td>
<td></td>
</tr>
<tr>
<td>P.H. 154 or 155</td>
<td>Any Quarter</td>
<td></td>
</tr>
<tr>
<td>Minor</td>
<td>Any Quarter</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>All Quarters</td>
<td></td>
</tr>
</tbody>
</table>

**Group Req.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.E. 130</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>P.E. 183, 182, 184</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Ed. 127, 129, 130</td>
<td>Any Quarter</td>
<td></td>
</tr>
<tr>
<td>P.E. 132</td>
<td>Any Quarter</td>
<td></td>
</tr>
<tr>
<td>P.E. 191</td>
<td>Any Quarter</td>
<td></td>
</tr>
<tr>
<td>Minor</td>
<td>Any Quarter</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>All Quarters</td>
<td></td>
</tr>
</tbody>
</table>

**Electives (include Physio. 20—Human Anatomy)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.E. 81, 83</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>P.E. 92, 84</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>P.E. 77, 78, 79</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P.E. 94, 95, 96</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P.E. 74</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Ed. 50</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Group Req.</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Elective</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

###电路图


2. Courses taught more than one quarter each year.
Physical Education 145

As a Recreation major you 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.

As a Health Education major you should complete Physical Education 55, 84, 135 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.

If a Dance major you 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.

If planning to enter a Physical Therapy school you should complete

1Courses taught more than one quarter each year.

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. As a Physical Therapy student you should work closely with your advisor 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, you 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, Psy. 112.

If entering the department for graduate study you should select supporting fields from one or two other areas of the University, closely allied to Physical Education and Recreation.

You should elect graduate courses from such areas as Education, Public Health, Sociology, Psychology, and Biological Science.

HPER Courses

Activity Courses for Men

<table>
<thead>
<tr>
<th>Activity</th>
<th>Credit</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Freshman Football (1F)</td>
<td></td>
<td>Staff</td>
</tr>
<tr>
<td>4. Boxing (1F, 1W, 1S)</td>
<td></td>
<td>G. Nelson</td>
</tr>
<tr>
<td>5. Boxing (Advanced) (1F, 1W, 1S)</td>
<td></td>
<td>G. Nelson</td>
</tr>
<tr>
<td>6. Football (1W) (Non-Varsity)</td>
<td></td>
<td>Ralston</td>
</tr>
<tr>
<td>7. Wrestling (1F, 1W, 1S)</td>
<td></td>
<td>G. Nelson</td>
</tr>
<tr>
<td>8. Wrestling (Advanced) (1F, 1W, 1S)</td>
<td></td>
<td>G. Nelson</td>
</tr>
<tr>
<td>10. Indoor Track and Field (1W)</td>
<td></td>
<td>Maughan</td>
</tr>
<tr>
<td>12. Track (1S)</td>
<td></td>
<td>Maughan</td>
</tr>
<tr>
<td>15. Softball (1S)</td>
<td></td>
<td>Staff</td>
</tr>
<tr>
<td>16. Swimming (1F, 1W, 1S)</td>
<td></td>
<td>Staff</td>
</tr>
<tr>
<td>17. Swimming (Intermediate) (1F, 1W, 1S)</td>
<td></td>
<td>Staff</td>
</tr>
</tbody>
</table>
146 College of Education

Activity Courses for Women

23. Basketball (1F, 1W, 1S)
   Baker
27. Weight Training (1F, 1W, 1S)
   D. Nelson
29. Varsity Football (1F)
   Ralston
34. Soccer (1F)
35. Volley Ball (1W)
36. Self Defense (1W)
37. Trampoline (1F, 1S)
38. Tumbling and Gymnastics (1W)
39. Soccer-Speed Ball (1F)
40. Volleyball (1F, 1W)
41. Basketball (1W)
42. Softball (1S)
43. Field Hockey (1S)
44. Tumbling and Stunts (1W, 1S)
45. Swimming (1F, 1W, 1S)
46. Swimming (Intermediate) (1F, 1W or 1S)
48. Rifle (1W)
50. Body Conditioning (1F, 1W, 1S)
51. Synchronized Swimming (1F)

Activity Courses for Men and Women

1. Hiking (1F, 1S)
   Staff
2. Skiing (1W)
   D. Nelson
3. Skiing (1W)
   Staff
9. Fencing (1F, 1W, 1S)
   Downs
12. Bowling (1F, 1W, 1S)
   Staff
15. Swimming (Advanced) (1F, 1W, 1S)
   Staff
19. Skiing (1W) 2nd Quarter
   D. Nelson
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 (Inter.) (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

Professional Courses

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)
   Staff
   *21. Fundamentals of Sports. Designed to develop the fundamental skills of social and square dancing. (1W)
   Staff
   *22. Fundamentals of Sports. Designed to develop the fundamental skills of badminton and golf. (1S)
   Staff
   *24. Dance Laboratory. Folk dancing for freshman and sophomore women majoring or minor ing in Physical Education. (1F)
   Fuller
   *26. Dance Laboratory. Tap dancing for freshman and sophomore women majoring or minor ing in Physical Education. (1S)
   Fuller
   *30. Fundamentals of Sports. Designed to develop the fundamental skills of boxing, weight training and wrestling. (1F)
   Staff
   *31. Fundamentals of Sports. Designed to develop fundamental skills of tumbling, gymnastics and trampoline. (1W)
   Staff
   *32. Fundamentals of Sports. Designed to develop the fundamental skills of volleyball and speedball. (1S)
   Staff
55. Safety and First Aid Instruction. Standard and Advanced and Instructor 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 certificates may be obtained by students who pass a satisfactory examination. (3F, 3W)
   Jensen

*Taught alternate years.
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) Fuller

78. Dance Laboratory. Techniques of intermediate modern dance for freshman and sophomore women majoring or minoring in Physical Education. (1W) Fuller

79. Dance Laboratory. Techniques of advanced modern dance for freshman and sophomore women majoring or minoring in Physical Education. (1S) 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. (3F, 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. (3W, 3S) D. Nelson


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, 2W) Staff

*Taught alternate years.

94. Physical Education Laboratory. For lower division women, designed to develop the fundamental skills of soccer-speedball and volleyball. (1F) Downs

95. Physical Education Laboratory. For lower division women, designed to develop the fundamental skills of basketball and basketball officiating. (1W) Downs

96. Physical Education Laboratory. A professional course for lower division women designed to develop the fundamental skills of softball and field hockey. (1S) Downs

98. Physical Education Laboratory. Fundamentals of individual sports for lower division women majoring or minoring in Physical Education. (1S) 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
148 College of Education

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. (2F, 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) Fuller

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) 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) Staff

122. Techniques in Physical Education. Designed to develop teachings techniques in tennis and badminton. Open to men and women. (2S) 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. Techniques in Physical Education. Designed to develop teaching techniques in volleyball, speedball and wrestling. (2F) Seniors only (2S) Juniors only Staff

131. Techniques in Physical Education. Designed to develop teaching techniques in gymnastics, tumbling, and trampoline. (2S) Staff

132. Water Safety Instructor's Course. Pre-requisites: 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. (3S) 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

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) Staff

161. Techniques in Physical Education for Women. Designed to develop teaching techniques in basketball. Consideration is also given to officiating basketball and pep club activities. (2W) Staff

162. Techniques in Physical Education for Women. Designed to develop teaching techniques in softball and field hockey. (2S) Staff

165. Techniques in Physical Education for Women. Designed to develop teaching techniques in stunts and tumbling. (2S) 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 in the Elementary School. Designed to give a philosophy of Physical Education in the elementary school.

*Taught alternate years.
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 techniques 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) C. Woodworth

182. Materials and Methods in Elementary 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. (2F) 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; 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. (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 cooperation 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

285. Problems in Physical Education. (3F, 3W, 3S) Hunsaker


If you don't scale the mountain you can't view the plain.
Library Science

ASSOCIATE PROFESSOR M. C. Abrams, UNIVERSITY LIBRARIAN; ASSISTANT PROFESSORS P. Carter, I. M. Logan; INSTRUCTORS 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 qualifies you for a Library Certificate, issued by the State Department of Public Instruction, and prepares you 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.


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

50. Reference Materials. A study of the essential reference work sources in general subject areas. Includes the uses of dictionaries, encyclopedia, yearbooks, handbooks, periodical indexes, and the more important subject and trade bibliographies. (3F)

100. Advanced Reference and Bibliography. A survey of the bibliographic organization and retrieval of information in the scientific and technical literature in each of the major disciplines. Prerequisite: Library Science 50. (3W) Staff

120. Technical Library Processes. Fundamentals of cataloging and the basic techniques necessary for organizing a library collection. Includes Dewey Decimal Classification and steps necessary to place books in circulation. (4W) Staff

150. Library Administration. Techniques of administration including: How to meet standards of library accreditation, work with teachers, reading guidance, story hours, library displays, methods of teaching the use of the library and planning library quarters. (3W) Staff

151. Library Practice. Observation and supervised practice in libraries under the direction of library personnel. Designed as the practice teaching experience for librarians. Prerequisite: Library Science 50, 120 and 150. (3S) Staff


160. History of Books and Libraries. The history of bookmaking, printing, and libraries. (3S) Staff

170. Readings and Conference. Limited to Library Science minors. Prerequisite: Instructor's consent. Credit arranged. Staff

Scrambled eggs can't be un-scrambled.
Psychology
(Psychology and Guidance)


Office in Main 175

Psychology—as a bridge between the biological and social sciences—is a scientific approach to understanding man and other animals. Its research interests are the understanding, prediction and control of behavior. Because it has important applications to the improvement of human efficiency, health, and the development and utilization of human resources, the study of psychology contributes both to your professional training and personal development.

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, U. S. Employment offices, various Civil Service positions, and in the military services; (7) (with additional graduate training) for college teaching and for research in government, industry, or universities, and (8) 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 has arrangements with schools, social welfare agencies, juvenile courts, and the state industrial school, by which graduate students and some seniors can have practical experience in counseling psychology. The counseling 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 recom-
mended that the following courses be included: Physiology 4; Sociology 70; English 35, 40, 41, 58, and other literature (novel and biography) courses; Physics 3 or 7; Mathematics 34, 35, and additional mathematics courses if you have an interest in this 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 and 112.

Requirements for a major in Psychology include 40 credits of approved courses from the following: Psychology 53, 71, 100 or 202 or 205, 112, 127 or 200, 140 or 145, 161, 183, 181 or 282; and approved courses from Psychology 80, 102, 108, 114, 115, 123, 155, 171, 175, 191, 202, 205. As upper division electives: Sociology 130, 153 or 170; Education 110; Speech 167 or 173; Zoology 102; Physiology 104 or 121, 122 and 123; the Education courses for teacher certification; S.W. 165; and upper division courses in literature. As an under-graduate student you are urged to take courses for a strong minor rather than to over-emphasize psychology courses.

A minor in Psychology (which should include Psychology 53, 71, 100 or 202 or 205, 112, 140 or 145, 161, 183, and 181) is recommended for high school teachers who expect to participate in the school guidance program, social workers, majors in speech correction, business administration, or other social sciences.

Graduate Study

Master of Science Degree in Psychology. A program of study for this degree is 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. Psychology and guidance courses prepare you for professional certification as a school counselor or school psychologist, and for continued graduate study in other professional fields of psychology. Besides the courses required for a specific professional objective, the Master of Science degree in psychology should include, during graduate or undergraduate study, courses in the following areas of psychology: (1) general experimental and comparative psychology, (2) systems and history, (3) learning and perception and thought, (4) child and adolescence (included in educational), (5) counseling 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, 181, 191, 200, 202, 205, 212, 213, 214, 216, 217, 221, 262, 270, 276, 280, 282, 283, 285, 286, 287, 288, and 289. If you have not majored in Psychology, 30 hours of approved courses in Psychology or closely related fields are a prerequisite to begin study as a graduate student in Psychology.

Master of Science Degree in Guidance. With a teaching certificate and a total of 30 credits in Education or/and in Psychology, you are eligible to begin study for this degree. Included in the required courses are: Education 110;
Guidance 287, 213; and Psychology 123 or 140, 183, 200, 202 or 205, 212, 280, 181, 282, 283, 285, 288, and 289; and a thesis in the field of guidance. These are also the courses required for a Professional Counselor’s Certificate.

Master of Science Degree in Psychology - Speech Pathology. The Department of Speech in cooperation with the Department of Psychology offers a composite Master of Science Degree in Psychology-Speech Pathology. The course of study includes courses jointly approved by the two departments.

Doctorate in Educational Psychology and Counseling. The Department of Psychology, 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 Ed.D. degree in Educational Psychology. The program requires two years of graduate study, including supervision of individual study, beyond the M.S. degree, plus a six months’ internship in school, mental hygiene clinic, or social agency. If interested, confer with Dean John C. Carlisle or Professor Arden Frandsen.

Psychology Courses

32. Mental Hygiene for College Students. Deals with the common personal and social problems of normal people. (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 any lower division student. (5F, W, S) Staff

171. 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) Sharp

80. Reading and Study Skills. A practical course, highly individualized, designed to aid you in improving the efficiency of your work and study habits. Individual appointments arranged for one-third of the time. (2F, W, 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. Prerequisite: Psy. 53. (3F, W, S) 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 53. (3F, W, S) Stone

105. Educational Psychology for Elementary School Teachers. A study from the point of psychological theory and research of how children learn and of the conditions of effective learning in the elementary school. 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. (3F, 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. May be taken 1, 2, or 3 quarters. (2F, 2W, 2S) Staff

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, of factors related to efficiency, theories of learning. Prerequisite: Psychology 53. (3S) Frandsen

140. Abnormal Psychology. A descriptive and explanatory study of the varieties of mental abnormality—psychoses, psychoneuroses, and minor maladjustments—their causes, the meth-
154 College of Education

ods of treatment and the mental hygiene approach in preventing psychological maladjustments. Prerequisite: Psychology 53. (3S)

145. Mental Hygiene. For teachers and other workers in social occupations. Designed 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)

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. Prerequisite: Psychology 53 or Instructor's approval. (3F)

161. Social Psychology. A study of the acquisition of personality of "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)

165. Psychology of Military Leadership. (3S)

171. Experimental Psychology. A laboratory course emphasizing experimental methods and techniques and requiring experiments and reports on selected topics in psychology. Prerequisite: Psychology 112. (3W)

175. Physiological Psychology. Physiological mechanisms underlying normal and abnormal behavior, with special attention to those operating in both organic and non-organic disturbances. Prerequisites: Psychology 53 and 71. (3S)

181. Psychometrics Applied to Guidance. A study of the 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. (5F)

183. Principles 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 interpersonal relation situations. (3W)

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)

200. Principles of Learning in Teaching. A study of learning theory and of experiments in psychology and education for the purpose of developing a set of learning principles as a guide to creating conditions for effective learning in both elementary and secondary schools. (3W)

202. Psychology of Adolescence. Growth, psychological and social characteristics, 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 education and in psychology.) (3Su)

205. Child Psychology and Development. The roles of maturation, learning, and environmental conditions in the motor, mental, social, emotional and personality development in children from birth to adolescence. Prerequisite: Psychology 53. (3F, W, S)

212. Treatment of Psychometric Results. Statistical methods of representation, and analysis of interrelationships of psychological test scores. (3W)

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 individually selected. (2F, W, S)

216. Research in Psychology. Credit arranged. (F, W, S)

217. Research for Master's Thesis in Psychology. Credit arranged. (F, W, S)

221. 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. (3S)

262. 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)

270. Perception and Thought. A study of the theories and experimentation on perception and thought. (3)
276. Comparative Psychology. A phylogenetic study of animal behavior, including perception, motivation, learning, distinctive behavior characteristics, and the factors affecting development. (3) 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

282. Individual Diagnostic Intelligence Testing. Techniques of individual testing, including intensive practice in the administration and interpretation of (a) the Stanford-Binet and Wechsler’s intelligence scale for children, in the examination of school-age children, and/or (b) the Wechsler’s adult intelligence scale for use with adolescents and adults. (3W) Frandsen

283. Theories of Counseling. A study of the theories of counseling, to develop greater understanding of and a more effective approach to counseling. (3S) Wright

285. Introduction to Projective Methods for the Study of Personality. The dynamics of human adjustment and the common projective methods (other than the Rorschach) for revealing motives, attitudes, and adjustment mechanisms of children and adults. (3S) Frandsen

286. Problems in Counseling. Individual case studies of children and adolescents presenting problems of diagnosis, guidance, remedial teaching, and psychotherapy. (3F) Wright

287. Occupational Information. Collection, classification, and uses of occupational information in counseling. (2W) Wright

288. Practicum in Counseling. Supervised practice in counseling in elementary or secondary schools, in the University, or in clinical or guidance agencies. (2F, W, S) Wright

289. Practicum in Psychological Testing. Supervised practice in psychological testing in elementary or secondary schools, in the University, or in clinical or guidance agencies. (2F, W, S) Staff

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

300. Educational-Psychological Theories in Practice. From observance and wide reading of educational-psychological theories—on motivation, learning, individual differences, personality, interpersonal relations, evaluation, etc.—hypotheses are formulated for checking by observation in selected school situations, both at the elementary and secondary levels. (3W) Frandsen

314. Advanced Independent Study in Psychology. (F, W, S) Staff

A man all wrapped up in himself makes a small package.
One finds many grey hairs but few wise men.
College of Engineering

D. F. Peterson, Dean
College of

Engineering

Department of Civil and Irrigation Engineering, 161
Civil Engineering, 161
Irrigation Engineering, 161
Agricultural Engineering, 167

Department of Electrical Engineering, 169

Department of Mechanical Engineering, 172

Department of Tool and Mechanical Engineering, 176

Department of Industrial and Technical Education, 178
Industrial Arts Education, 179
Trade and Industrial Education, 180
Technical Education, 184
Industrial Technology, 185
Aeronautical Technology, 186
Automotive Technology, 188
Welding Technology, 189

Engineering Experiment Station, 284

Degrees Offered:
Bachelor of Science
Master of Science
Civil Engineer
Irrigation Engineer
Doctor of Philosophy
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. The Engineering departments offer the Bachelor of Science degree in Agricultural, Civil, Electrical, Mechanical, and Tool Engineering. If you are interested in Chemical Engineering, the first two years of work may be taken under the supervision of the Mechanical Engineering Department. The Master of Science and Doctor of Philosophy degrees are offered in the various undergraduate majors and in irrigation 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. If you plan to do graduate study in Engineering you may also take additional mathematics and physics.

The objectives of the undergraduate Engineering curricula are 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 and, where applicable, the curricula are accredited by that agency.

The Department of Industrial and Technical Education offers undergraduate and graduate degrees 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, Drafting, Machine Tool, 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.

Nuclear Engineering. A senior sequence of up to twelve hours of nuclear engineering may be elected by any engineering major. See course offerings under Department of Mechanical Engineering.

Admission. For general requirements, see introductory section of this catalog. For Engineering you should have one unit each of high school chemistry and physics, one and one-half units of algebra, one unit of geometry and, if possible, one-half unit of trigonometry. If you are deficient in mathematics,
your admission will be conditional until the deficiency is made up. More than four years will be required for graduation unless mathematics deficiencies are made up during a summer session. Students deficient in algebra should take Math. 34 during the Summer session following their graduation from high school, or Math. 97 during the Summer session between the freshman and sophomore years. As an Engineering student you are expected to take Math. 97 prior to beginning your sophomore year courses. Engineering students having deficiencies who do not wish to make them up during Summer session, and students who wish to take advanced air or military science, or who wish to take courses beyond those shown in the prescribed engineering curricula 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 good standing 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 Concrete 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 Institute of Electrical 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.
bership 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, including freshmen. Outstanding high school scholars should write directly to the Dean of the College of Engineering early in the senior year regarding these scholarships. (See "Scholarships, Fellowships, Awards" section in this 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)


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.

1On leave.
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.

With properly selected courses from the Civil and Agricultural Engineering you may obtain special training in Irrigation and Drainage Engineering in this department.

Civil Engineering Curriculum

The Civil Engineering curriculum has been accredited by the Engineers Council for Professional Development.
stay in school, or you may wish to participate 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

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 1, 2, 3</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Math. 34, 35, 46</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 10, 11</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Geology 3</td>
<td>3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>English 1, 2, 3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Plane Geometry or elective</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.S., A.S., or P.E.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

### SECOND YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 84, 85</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 21, 22, 23</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Math. 97, 98, 99</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Humanities 3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>M.S., A.S., or P.E.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

### THIRD YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 20, 21, 22</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math. 110</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities 3</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>C.E. 128, C.E. 101</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Adv. M.S. or A.S.</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

### FOURTH YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 102, 103, 104</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>C.E. 140, 141, 142</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>E.E. 104, 105, 106</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 114, 115</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>English 111</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Adv. M.S. or A.S.</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

### FIFTH YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 105, 106, 107</td>
<td>6</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>C.E. 195</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>C.E. 146 or C.E. 193</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.E. 146 or C.E. 194</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.E. 198</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Technical Electives 4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>C.E. 150, 173</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

### 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.

---

1. 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 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.

2. Two credits are given for M.S. or A.S.

3. You are required to earn a minimum of 19 credits in approved humanities. The following are recommended:

- History 4, 5 or Psychology 53 and Cr. Hrs. Sociology 70
- English 34, 35, 36, Great Books and Ideas...
- Philosophy and Religion
- or FAA 1, FADr 1, Fam 1

You should obtain prior approval from your advisor and department head for any variations from this suggested program.

4. Technical electives may be selected from the following: C.E. 120, 121, 122, 127, 130, 131, 182, 147, 181, 182; A.E. 148, 145, 148, 149, and 160; English 111; Advanced Mathematics or graduate courses with approval of instructor. (Courses will be taught only for classes of ten or more students.)
gree. 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


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


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: C.E. 2, 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, and 104. 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, economics, 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


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) Flammer, 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


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, 6S) Flammer

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 re-tinted 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


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) Kepner

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

All courses with 200 number or over are reserved for graduate students. Undergraduate senior students who have a high scholastic standing may register for them only with approval of the department.

201. Advanced Mechanics of Materials. Development of various theories of failure and stress-strain relationships as they apply to problems of direct and shear loads, flexure, and torsion; and with special application to thick-walled cylinders, discs, curved beams, unsymmetrically and eccentrically loaded members; and photoelastic analysis. Prerequisites: Math. 110 and C.E. 104. Three lectures. (3F, W, or S) Watkins

202, 203. Advanced Structural Theory and Design. Advanced topics in structural theory including analysis of indeterminate frame works, plates, and shells; model analysis; individual problems in the design of modern structures. Prerequisites: C.E. 132, 201. Three lectures. (3W, 3S) Watkins

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) Milligan

211. Masonry Dams. Design of rigid type dams. Stress, analysis and design of gravity, gravityarch, multiple arch, and deck types of masonry dams. Timber, steel, and miscellaneous types. Time arranged, Prerequisite: C.E. 103. (3F) Rich

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


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

228. Advanced Concrete Engineering. Basic properties of concrete and concrete materials including the study of admixtures and pozzolans. Significance of tests and analysis of acceptance tests, performance tests, and control tests. Concrete as a construction material. Prerequisite: C.E. 128 or equivalent. (3W or 3S) 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. Time and credit arranged. (F, W, S) Staff

241. Intermediate Fluid Mechanics. Effects of pressure, inertia, gravity, viscosity, compressibility, and surface tension on the motion of fluids. Surface resistance, form resistance, lift, and propulsion. Prerequisites: C.E. 142 or equivalent. (4W) 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, hydraulic 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

260. Dimensional Analysis and Similitude. The application of dimensional analysis and similitude to the solution of a variety of problems in engineering in the fields of fluid mechanics, structural analysis, vibration problems, electrical and other physical phenomena. Applications include design of experiments, interpretation of experimental data, development of equations, theory of models, and use of analogies. Prerequisite: Approval of instructor. (4F) Watkins, Hansen

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. Prerequisite: C.E. 193, 194. (3W or S) Kepner

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.

Agricultural Engineering 167

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

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 1, 2, 3</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Math. 857, 46, 97</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 10 or Chem. 3</td>
<td>5</td>
<td>5</td>
<td>....</td>
</tr>
<tr>
<td>Geology 3</td>
<td>....</td>
<td>....</td>
<td>5</td>
</tr>
<tr>
<td>M.E. 21, 22, 23</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>English 1, 2, 3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>M.S., A.S., or P.E.²</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

SOPHOMORE

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math. 98, 99, 110</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Physics 20, 21, 22</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>C.E. 84</td>
<td>....</td>
<td>....</td>
<td>....</td>
</tr>
<tr>
<td>Farm Crops</td>
<td>3</td>
<td>3</td>
<td>....</td>
</tr>
<tr>
<td>Agron. 56</td>
<td>....</td>
<td>....</td>
<td>4</td>
</tr>
<tr>
<td>C.E. 101</td>
<td>....</td>
<td>....</td>
<td>4</td>
</tr>
<tr>
<td>Humanities³</td>
<td>....</td>
<td>....</td>
<td>3</td>
</tr>
<tr>
<td>M.S., A.S., or P.E.²</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

JUNIOR

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 102, 103, 104</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>C.E. 140, 141, 142</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>E.E. 104, 105, 106</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 114, 115</td>
<td>3</td>
<td>3</td>
<td>....</td>
</tr>
<tr>
<td>English 111</td>
<td>....</td>
<td>....</td>
<td>3</td>
</tr>
<tr>
<td>Humanities</td>
<td>....</td>
<td>....</td>
<td>5</td>
</tr>
<tr>
<td>C.E. 173 or Humanities</td>
<td>....</td>
<td>....</td>
<td>5</td>
</tr>
<tr>
<td>Humanities or C.E. 173</td>
<td>....</td>
<td>....</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

SENIOR

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 105, 106</td>
<td>6</td>
<td>6</td>
<td>....</td>
</tr>
<tr>
<td>C.E. 150, 129, 195</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Farm Machinery</td>
<td>....</td>
<td>....</td>
<td>4</td>
</tr>
<tr>
<td>Farm Power</td>
<td>....</td>
<td>....</td>
<td>5</td>
</tr>
<tr>
<td>A.E. 143, 145</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>A.E. 148</td>
<td>....</td>
<td>....</td>
<td>4</td>
</tr>
<tr>
<td>Humanities³</td>
<td>....</td>
<td>....</td>
<td>4</td>
</tr>
<tr>
<td>C.E. 198</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>18</td>
<td>19</td>
</tr>
</tbody>
</table>

¹²³ See footnotes page 168.
168 College of Engineering

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. (6F, W) Daines

10. Irrigation Practice. Primarily for agricultural students. Principles and practices of efficient use of water, water measurement, farm surveying. Three lectures, one lab. (4F) Jarrett


102. Farm Power. Operation, care, and maintenance of tractors and farm engines. Diesel, L. F. G., 4-cycle and 2-cycle engines and electric motors. Three lectures, two labs. (6W, 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 arch torch. Three lectures, two labs. (6F) Jarrett


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 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.

Two credits are given for M.S. or A.S.

You are required to earn a minimum of 19 credits in approved humanities. The following are recommended: History 4, 5 or Psychology 53 and Sociology 70, 10 hours; English 34, 35, 36, Great Books and Ideas, 9 hours; or Philosophy and Religion, 9 hours; or FA-A 1, FA-Dr 1, FA-M 1, 9 hours. You should obtain approval from your advisor and department head for any variations from the suggested program.

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

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) Daines

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

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. 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. Credit arranged. (F, W, S) Staff
Department of
Electrical Engineering


Office in Engineering and Physical Sciences 102

The four-year program listed here leads to the degree of Bachelor of Science, 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

Course FRESHMAN F W S
C.E. 1, 2 ........................................ 1 1 ...
E.E. 26 ........................................ ... 1
Math. 35, 46, 97 .................................. 5 5 5
M.E. 21, 22, 23 .................................. 3 3 3
English 1, 2, 3 .................................. 3 3 3
Chem. 10, 11 or 3, 4, 5 .......................... 5 5 ...
Humanity¹ or Elective² .......................... ... 5
M.S., A.S., or P.E.³ ............................... 1 1 1

18 18 18

Course SOPHOMORE F W S
E.E. 79, 80, 81 .................................. 4 4 4
Math. 98, 99, 110 ................................ 5 5 5
Physics 20, 21, 22 ............................... 5 5 ...
M.E. 114, 115 .................................... 3 3 3
M.S., A.S., or P.E.³ ............................... 1 1 1

18 18 18

Course JUNIOR F W S
E.E. 124, 125, 126 ................................ 4 4 4
E.E. 111, 112, 116 ................................ 3 3 4
C.E. 101, 102, 103 ............................... 4 4 4
Physics 122 ...................................... 3 ...
M.E. 114, 115 .................................... 3 3 3
English 111 ...................................... ...

17 18 18

Course SENIOR F W S
E.E. 139, 141 .................................... 3 4 ...
E.E. 180, 181, 182 ................................ 4 4 4
E.E. 107, 108, 160 ................................ 4 4 4
E.E. 175, 176, 177 ................................ 1 1 1
E.E. 151 or Elective⁴ ............................ ...

2 2
Elective² ........................................ 3 ...
Humanities¹ ..................................... 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 possible course of study is listed below which will lead to the Master of Science degree. Modifi-

¹May be selected from the following: History, Social Sciences, Literature, Philosophy, Fine Arts, and Non-Sectarian Religion.
²Electives must be approved by department head.
³Two credits are given for M.S. or A.S.
⁴May be taken any quarter, omitting a humanities course.
170 College of Engineering

cification 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.

Typical course of study leading to the degree of Master of Science in Electrical Engineering:

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
<th>Su</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.E. 211, 212</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E.E. 232, 233</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E.E. 222, 223</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E.E. 298 (thesis)</td>
<td>3</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math. 130, 131, 132 or 140, 141, 142</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Approved Elective1</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1Recommended electives include modern physics, physical chemistry, nuclear science or other E.E. courses.


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


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 topography; formulation of network equations; solutions via differential equation, LaPlace transform and operational methods. Prerequisites: 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) Chadwick

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) Cole

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, vacuum and gas tubes, photoelectricity, semi-conductors and transistors. Prerequisites: E.E. 81, Math. 110; concurrent registration in Physics 122 is desirable. Three lectures, one lab. (4F) Clark

125. Electronic Circuits I. Principles, analysis and design of tube and transistor voltage amplifiers: feedback principles and feedback amplifiers. Prerequisite: E.E. 124. Three lectures, one lab. (4W) Chadwick

126. Electronic Circuits II. Principles, analysis and design of tube and transistor power amplifiers; RF power amplifiers and oscillator; modulation and detection systems. Prerequisite: E.E. 125. Three lectures, one lab. (4S) Chadwick

129. Electroacoustics. Fundamentals of architectural acoustics: Theory and principles of electro-mechanical transducers, including loud speakers, microphones and vibration pickups; recording methods and equipment; measurement techniques in acoustic and electro-mechanical systems. Prerequisites: E.E. 111, 125. Three lectures, one lab. (4S) 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

141. Microwaves. Fundamental principles of microwaves, generators, cavity resonators; transmission lines, wave guides, parabolic and horn radiators; microwave propagation; measurements in the microwave region. Prerequisite: E.E. 139. Three lectures, one lab. (4W) 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 of each project. Two labs. (2F, 2W, 2S) Staff


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, Math. 110. One lecture, one lab. (2F, 2W, 2S) Watkins


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. Prerequisite: Physics 122. Three lectures, one lab. (4F) Jones

181, 182. Pulse and Digital Circuits. Analysis and design of low pass and band pass amplifier circuits utilizing tubes and transistors. The use of tubes and transistors in static and regenerative switching circuits including pulse shaping circuits, multivibrator and blocking oscillator circuits. An introduction to counters, shift-registers, logic circuits, and information storage devices used in digital systems. Prerequisites: E.E. 100, 112. Three lectures, one lab. (4W, 4S) Jones

200. Special Studies in Electrical Engineering. Preparation of professional papers and reports, research, and special problems. Credit arranged. (F, W, S) Staff
211, 212. Advanced Electronic Circuits. Designed for graduate students who have completed a series of courses on pulse circuits using both tubes and transistors, such as E.E. 181, 182. The coverage is somewhat similar except that in this graduate series the emphasis is on analytical methods and development of more advanced pulse and digital techniques. Prerequisites: E.E. 180, 181, 182 or equivalent. Three lectures, one lab. (4F, 4W)

222, 223. Network Synthesis. The mathematical basis and design methods for two and four-terminal passive networks having physically realizable driving point immittances. Prerequisite: E.E. 112. (3F, 3W)

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. Prerequisite: E.E. 139 or equivalent. Three lectures. (3W, 3S)

235. Radio Propagation. Radio wave transmission through dielectric and ionized mediums. Calculation of effects of reflection and absorption of radio waves from the earth's ionosphere with practical problems encountered in long distance communication. Introduction to magnetoionic theory. Prerequisite: E.E. 139 or equivalent. (3Su)

240. Microwave Measurements. Theory and practice in measurement of impedance, power, frequency and wave length at frequencies above 500 mc. Oscillators and detectors will be studied along with the characteristics of certain types of transmission lines and associated equipment in the microwave region. Prerequisites: E.E. 139, 141 or equivalent. One lecture, one lab. (2Su)

251. Servomechanisms and Automatic Controls. Advanced theory and design of linear servo systems. Feed-back synthesis. Transient response and stability problems. Introduction to non-linear systems. Prerequisite: E.E. 160 or equivalent. Three lectures, one lab. (4S)

275, 276, 277. Graduate E.E. Seminar. A weekly meeting of staff and graduate E.E. students. Each student prepares and presents technical papers on suitable topics. One lecture. (1F, 1W, 1S)

298. Graduate Thesis. Credit arranged.

Department of

Mechanical Engineering

(Mechanical Engineering, Chemical Engineering)


Office in Engineering 201

Mechanical Engineering is the design and development of machines. Machines can be anything from a crowbar to an electronic computing machine, or from a sling shot to an inter-planetary rocket. Most of the technical staffs of industries, public utilities, and government agencies include mechanical engineers. Mechanical engineers specialize in such areas as aeronautical, automotive, nuclear, petroleum, industrial, space engineering, thermodynamics, heat transfer, machine design, power production, systems engineering, management, sales, refrigeration and air conditioning, etc.

Limited specialization in these areas can be achieved in an undergraduate program in the senior year, but most firms prefer that additional specialization be obtained in industry or on a graduate level. Because of the rapid obsolescence of specific applications of
the sciences today, increased emphasis has been placed upon a thorough understanding of the basic engineering sciences.

In the Mechanical Engineering curriculum a thorough grounding is provided in the basic sciences of mathematics, chemistry and physics, in the basic engineering sciences, and in the application of these sciences to the machine design and heat power areas. Proper selection of humanities and the technical electives will allow you to prepare yourself adequately to become an engineer-in-training in one of the specialized areas or to extend your scientific background in preparation for graduate study.

Laboratory facilities are available for student use. A subcritical reactor is available to those interested in nuclear engineering.

The engineering drawing sequences provide instruction in the various aspects of drafting and graphics for all departments in the University. Non-engineering students may qualify for a minor in engineering (mechanical) drawing on completion of 18 credits consisting of M.E. 21, 22, 23, and such other courses as are approved by the department.

Industrial management students may obtain a minor in a specialized area of power or design by completing a total of 18 credit hours in courses approved by the Head of the Department of Mechanical Engineering.

Mechanical Engineering Curriculum

<table>
<thead>
<tr>
<th>Courses</th>
<th>FRESHMAN</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 10, 11, 12</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>M.E. 21, 22, 23</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Math. 35, 46, 97</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>English 1, 2, 3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>C.E. 1, 2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.E. 3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.S., A.S., or P.E.²</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Courses</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 20, 21, 22</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math. 98, 99, 110</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>T.E. 56, 150</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>C.E. 101</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History 1, 2, 3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 4</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.S., A.S., or P.E.²</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Courses</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.E. 114, 115, 116</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>C.E. 102, 103, 104</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>E.E. 104, 105, 106</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>C.E. 140, 141, 142</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>English 111</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.E. 120</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.E. 130</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities³</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Courses</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.E. 121, 122, 123</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>M.E. 131, 132, 133</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>M.E. 140, 141, 142</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 170</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.E. 174</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.E. 135</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Electives³</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Humanities³</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Speech 105</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

³If 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 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.

²Two credits are given for M.S. or A.S.

³You are required to earn a minimum of 24 credits in approved humanities including History 1, 2 and 3. The following additional sequences are recommended: Psychology 53 and Sociology 70, 10 hours; English 34, 35, 36; Great Books and Ideas, 9 hours; or Philosophy and Religion, 9 hours; or FA-A 1, FA-Dr 1, FA-M 1, 9 hours. You should obtain approval from your advisor and department head for any variations from the suggested program.

To be selected in conference with advisor from the following: (a) T.E. 158, 180, 185; (b) Physics 120, 121, 130; (c) Math. 130, 131, 132; (d) Math. 140, 141, 142; (e) App. St. 131, 132, M.E. 171, 172, 173; (f) M.E. 190, 191, 192; (g) other.


**Note:** Do not purchase drafting instruments before first class in the following courses:

6. Elementary Drafting. (Formerly E.D. 60.) Lettering, use of instruments, and fundamentals of drafting. Open only to forestry students. One lab. (1W) Smith

11. Technical Drawing. (Formerly E.D. 59.) Lettering, use of instruments, sketching, multiview drawings, reading and interpreting blueprints, and non-technical charts. Not open to students majoring in engineering. Two labs. (2F, W) Staff

12. Technical Drawing. Sections, auxiliaries, pictorials, developments, dimensions, screw threads, and threaded fasteners. Prerequisite: M.E. 11. Two labs. (2W, S) Staff


19. Aircraft Drafting. (Formerly E.D. 196.) Aircraft drafting techniques, numbering systems, change methods, and technical specifications. Prerequisite: M.E. 13 or M.E. 23. One lecture, two labs. (3S) Smith


22. Engineering Graphics. (Formerly E.D. 61.) Revolutions, intersections and developments, vectors, alignment charts, graphs, and pictorial drawings. Prerequisite: M.E. 21. One lecture, two labs. (3W, S) Staff

23. Engineering Graphics. (Formerly E.D. 62.) Conventional representations, dimensioning, and working drawing in the following areas: machine, structural, electrical, and piping. Prerequisite: M.E. 22. One lecture, two labs. (3F, S) Staff

101. Methods of Teaching Drafting. (Formerly E.D. 120.) Objectives, principles, standards, tests, and equipment, design of courses, teaching techniques, organization and selection of instructional materials and methods. For prospective industrial education teachers. Prerequisite: M.E. 13 or M.E. 23. Two lectures, one lab. (3F) Loveless

105. Special Problems in Drawing. This course is intended to give upper division students an opportunity to work in special areas of architectural drawing, perspective drawing, production illustration, machine and sheet metal drawing, and other areas as approved by the head of the department. Prerequisite: M.E. 13 or M.E. 23. Credit arranged. (F, W, S) Walls

110. Heat Engines. Introduction to elementary thermodynamics and basic heat power cycles. Prerequisite: Physics 19. Three lectures, one lab. (4F, W or S) Smith


120. Mechanical Engineering Measurements. Basic Mechanical Engineering Measurement, Methods, Comparisons and Procedures. Prerequisite: M.E. 114, C.E. 140. Two lectures, one lab. (3W) Holdridge

121, 122, 123. Mechanical Engineering Laboratory. Tests of mechanical engineering equipment with emphasis on analysis and procedure. Basic tests in Heat Transfer, Mechanical Vibrations, Compressible Flow and Theoretical and Applied Mechanics. Prerequisites: M.E. 120 and Senior Standing. Two labs. (2F, 2W, 2S) Eisenstein, Holdridge

130. Kinematics. Analysis of displacement, velocity and acceleration in mechanisms by graphical and analytical methods. Velocity and acceleration polygons and diagrams. Kinematic design of cams, belts, toothed gears, gear trains, and miscellaneous mechanisms. Synthesis of mechanisms. Prerequisite: C.E. 102. Two lectures, one lab. (3F, S) Eisenstein


132. Machine Design II. Analysis of static and dynamic forces and stresses in machine elements. Main topics are: design of springs, power transmission equipment, shafting,
couplings, clutches and brakes, bearings with sliding and rolling contact, lubrication. Vibrations, deflections, and critical speeds of shaft. Prerequisite: M.E. 131. Three lectures, one lab. (4W) Eisenstein

133. Machine Design III. Design of belt and chain drives, geared, flywheels, etc. Design of mechanical systems involving stress analysis and dynamics. Introduction to advanced topics. Prerequisite: M.E. 132. Three lectures, one lab. (4S) Eisenstein

134. Fundamentals of Machine Design. Application of principles of mechanics to the design of basic machine elements. Force and stress analysis. Introduction to general design of major machine members; fastenings, power transmitting devices, shafts, bearings, gearing. Prerequisite: M.E. 130. Three lectures, one lab. (4W) Eisenstein

135. Dynamics of Machinery. Analysis of motion arising from vibrations of systems of one or more degrees of freedom; free and forced vibrations. Application of theory to practical problems of rotating and reciprocating machines; balancing of machinery. Analysis of dynamic forces in machinery. Two lectures and 1 lab. (3S) Staff


150. Engineering Test Statistics. Statistical procedures applied to design and interpretation of engineering testing. Offered in Thiokol Cooperative program only. Arranged. Staff


174. Industrial Organization. Types of organizations, wage systems, inspection, motion and time study, personnel relations. Prerequisite: senior classification. Three lectures. (3W) Watkins


187. Internal Combustion Engines. Thermodynamic analysis of cycles in internal combustion engines. Combustion, fuel systems, and auxiliaries for both piston and turbine type engines. Prerequisite: M.E. 116. Three lectures. (3S) Staff

190, 191, 192. Nuclear Engineering. Atomic and nuclear theory; nuclear reactions and radiations; nuclear reactor theory; reactor instrumentation and control; radiation monitoring and safety; radiation shielding; reactor fuels and fuel processing; thermal aspects of reactors; types of reactors. Three lectures, one lab. (4F, 4W, 4S) Embry

199. Special Problems. Formulation and solution of theoretical or practical problems which relate to mechanical engineering. Comprehensive report required. Prerequisite: senior classification and permission of head of department. (3F, 3W, 3S) Staff


God helps those who help themselves.
This department offers a four-year curriculum with the degree of Bachelor of Science in Tool and Manufacturing Engineering.

This branch of engineering is devoted primarily to planning the processes of economic manufacture; the art and science of analyzing, planning, designing, construction, and producing manufacturing facilities. The Manufacturing Engineer works closely with research and development, product engineering, methods engineering, machine design, tool design, plant layout engineering, gage engineering, and manufacturing cost estimating.

National surveys indicate that large numbers of engineers are needed in manufacturing engineering. As industrial production expands in our own state and across the nation, increasing opportunities are becoming available. The demand for Tool and Manufacturing Engineers is greater than the supply.

Facilities. The Tool Engineering laboratories, the heat treatment, inspection and senior students' design room are all equipped with modern facilities for teaching, for engineering experimentation, and for student development in Manufacturing Engineering.

A 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.

Student Chapter No. 2 of the American Society of Tool and Manufacturing Engineers promotes the professional and social interests of its engineering majors. Members of the teaching staff are members of the national society.

Tool and Manufacturing Engineering Curriculum

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E. 1, 2</td>
<td>1</td>
<td>1</td>
<td>..</td>
</tr>
<tr>
<td>T.M.E. 50</td>
<td>..</td>
<td>..</td>
<td>1</td>
</tr>
<tr>
<td>T.M.E. 56</td>
<td>..</td>
<td>..</td>
<td>3</td>
</tr>
<tr>
<td>Math. 35, 46, 97</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>English 1, 2, 3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 21, 22, 23</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Chem. 10, 11</td>
<td>5</td>
<td>5</td>
<td>..</td>
</tr>
<tr>
<td>P.E., M.S., or A.S.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

18 18 16

SOPHOMORE

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math. 98, 99, 110</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Physics 20, 21, 22</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>T.M.E. 57, 52, 53</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Welding 97</td>
<td>3</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>Humanities</td>
<td>..</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>P.E., M.S., or A.S.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

17 17 17

1If 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 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.

2Two credits are given for M.S. or A.S.
### Tool and Manufacturing Engineering Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.M.E. 151, 152, 153</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>T.M.E. 150, 148</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>C.E. 101, 102, 103</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>E.E. 104, 105, 106</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 114</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>18</td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.M.E. 155, 156, 157</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>T.M.E. 181, 182</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>T.M.E. 184</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T.M.E. 187, 188</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>M.E. 130, 134</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>C.E. 140, 144</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>English 111</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>B.A. 174</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>17</td>
<td>16</td>
</tr>
</tbody>
</table>

---

### Tool Engineering 177

50. Orientation. Lectures, and films to acquaint the student with the work of the tool and manufacturing engineer. (1S) Staff


52. 53. Production Processes. Shaper, milling, and grinding operations. Prerequisite: T.M.E. 51 or 56. Two lectures, one lab. (3W, S) Staff

56. Machine Lab for Engineers. Acquaints the student with basic machine tool operations. Two lectures, one lab. (3F, W, S) Staff

57. Quality Inspection and Control. A study of the theory and practice of precision measurements, inspection methods, and control of quality of the manufactured product. Prerequisite: Math. 44 or 46. (3F) Somers

145. Manufacturing Processes. Fundamentals of manufacturing processes; shows possibilities and limitations of these processes and their application to fabrication of industrial products. (3F, S) Child

150. Engineering Metallurgy. A study of the physical properties, composition, constituents, and heat treatment of metals and metal alloys. Material specifications, tests, and places of applications in industry are reviewed. Prerequisite: Chem. 10. Three lectures, one lab. (4F, W, S) Preator

151. Tooling Operations. Develops an understanding of the capacity and versatile usefulness of the fundamental machines and equipment used in manufacturing engineering. Prerequisite: T.M.E. 53. Two lectures, two labs. (4F) Child

152. Planning. Deals with the analysis of the product design, planning procedures, routing methods, and the organization of the operational sequence. Prerequisites: T.M.E. 151. Two lectures, two labs. (4W) Child

153. Tooling Standards. Studies the utilization of standard equipment, standard tooling and standard gaging methods adapted to the manufacturing process. Prerequisite: T.M.E. 152. Two lectures, two labs. (4S) Child

158. Manufacturing Analysis. Economics of tooling operations; the productivity of machines, tool maintenance, tool costs, and job estimating. Prerequisite: T.M.E. 148. (3F) Preator


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 production. Three lectures, two labs. Prerequisite: T.M.E. 153. (5W) Somers

182. Die Design. Emphasizes design and application of tooling to materials and products fabricated by press working production methods. Prerequisite: T.M.E. 181. Three lectures, two labs. (5S) Preator

183. Plant Layout. A study of the utilization of space, machines, materials handling methods and equipment for economical production. Laboratory consists of organization and planning details for layout of production facilities. Prerequisite: T.M.E. 148. Two lectures, one lab. (3S) Somers

184. Tool and Manufacturing Engineering Seminar. A review of current technical literature dealing with the latest production methods. Oral and written reports presented for discussion. (2F) Staff

185, 186. Co-operative in Plant Training. A co-operative training course conducted by the University and industry to supplement academic work with tool and manufacturing experiences. A satisfactory report from industry is required. Time and credit arranged. (3F) Staff

187, 188. Senior Project Laboratory. Each student is required to work with a manufacturing problem involving design, development, construction, and testing. A formal technical report is required of each student. Prerequisite: Senior classification in Tool and Manufacturing Engineering. (2W, S) Staff
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 programs leading to the Bachelor of Science degree.

(I) 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.

With the emphasis now being given to the training of technicians for industry, USU is giving additional emphasis to the training of teachers in this rapidly expanding field. There is great need for them in vocational schools, junior colleges, and in senior colleges which have technician training programs of the technical institute type. The various teacher training curricula are described under the Industrial Education section.

(II) Programs of University Grade for Industrial Technicians. 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 University education. The programs prepare you as a technician for technical, supervisory, or managerial positions in modern industry, and provide an excellent foundation for entrance into Civil Service industrial positions or for private business. Curricula in these programs are available with majors in Aeronautics, Automotive, and Welding Technology. They are described later under the sections carrying these headings.

**Technical Institute Type Training**

*Industrial Technician Program.* A third kind of program of a non-degree nature is also offered by the department. This is usually a two-year program designed to prepare Industrial Technicians for modern industry. Completion of any one of the two-year curricula, leads to a certificate of completion. The industrial technician program offers many distinct advantages to students.

Upon completing this program you are well prepared with the technical skills and knowledge in the field of your choice and through your association and activities on a university campus you are prepared to assume your role as a worthy citizen. Many industrial leaders of today have completed programs of this kind and have shown that the basic foundation they acquired through such programs gave them many opportunities for further progress and advancement. 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 Education. Also, the Master of Industrial Education degree is offered. In this degree the traditional Master's thesis is replaced with additional course work and a seminar report. 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. 101, 112, 113, 114, 121, 129, 142, 143, 144, 148, 150, 171, 172, 173, 174, and 182. 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.

**Industrial Education**

Curricula are offered for the professional training of teachers, supervisors, and administrative staff in Industrial Education. In addition, courses in woodwork, metalwork, and plastics 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**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1, 2, 3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Math. 34, 35, 44</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 11, 12, 13</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>I.E. 61, 62, 63</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>I.E. 1, 70</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>F.A. Art 1</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approved Electives</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.S., A.S., or P.E.²</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>16</td>
<td>15</td>
</tr>
</tbody>
</table>

**SOPHOMORE**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ. 51</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Phys. 31, Chem. 31, Geol. 31</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bot. 1, Physio. 4</td>
<td></td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>T.E. 51, Soc. 70</td>
<td>4</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>I.E. 40, Speech 21</td>
<td>2</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Weld. 97, F.A. Art 5</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>M.S., A.S., or P.E.²</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15</td>
<td>17</td>
<td>15</td>
</tr>
</tbody>
</table>

**JUNIOR**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psy. 100, 102</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pub. Health 154 (or 155—4 cr.)</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>I.E. 148, 101, 143</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I.E. 142</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I.E. 73, F.A. Art 118</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>E.E. 51, I.E. 88, 145</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Educ. 113, 114</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Approved Electives</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>16</td>
<td>17</td>
</tr>
</tbody>
</table>

**SENIOR**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.E. 107, 112, 123</td>
<td>3</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>I.E. 129, 121</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>I.E. 102</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I.E. 110</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.E. 101</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Approved Electives</td>
<td>8</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

### 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. A candidate for the degree of Bachelor of Science in Industrial Education 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 members of the Industrial Education staff.

### Trade and Industrial Education Curriculum

**FRESHMAN**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Training</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>English 1, 2, 3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>I.E. 6, Math. 34³</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 11, 12, 13</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Art 1</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.S., M.S., P.E.³</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

**SOPHOMORE**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Training</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Phys. 31, Chem. 31, Geol. 31</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bot. 1, Physio. 4</td>
<td></td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Math. 35</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Approved Electives</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>A.S., M.S., or P.E.²</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

**JUNIOR**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adv. Trade or Tech.</td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>English 58</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Speech 21</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Econ. 51</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Psy. 100, 102, Soc. 70</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>I.E. 101, Ed. 113</td>
<td></td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>I.E. 118, 120</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives³</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>16</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

¹If 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.

²Two credits are given for M.S. or A.S.

³If a high school teaching certificate is desired, Education 114 and Public Health 154, or 155 must be included among the electives.
<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adv. Trade or Tech.</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>I.E. 107, 110</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>I.E. 129, 121</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>I.E. 112</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I.E. 102</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 112</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Econ. 125</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

16 17 16

**Industrial Education Courses**

1. **Orientation.** The study of the various occupational opportunities in Industrial and Technical Education, including the necessary preparation for entrance into these occupations. (2F, W) Staff

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. (3F, S) Mortimer

13. **Driver Training.** How to drive an automobile correctly and safely. Traffic rules and regulations essential to sound driving; physical qualifications and tests of drivers; and actual supervised training in dual-control cars. Two lectures; lab arranged. (OF, S, Su) 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, seams, riveting, and wiring. Two three-hour labs. (2F) Halles

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. Two labs., one lecture. (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. Prerequisite: I.E. 61. Two labs., one lecture. (3W) Swenson

**Industrial Education 181**

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. Prerequisite: I.E. 62. Two labs., one lecture. (3S) Swenson

68. **Practical Electric Wiring.** 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 finishes, French polishing, hand polishing, stains, paints, enamels, gun work, interior and exterior wood finishes, plaster paints, brick stais, and stucco paints. Two lectures, three one-hour labs. (3F, W, S) Swenson

73. **Materials of Industry.** Wood and wood products, commercial veneered panels, roof coverings, wall boards, insulating materials, siding, composition panelings, glass products, plastics, and other materials used in modern industry. (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) Staf

83. **Basic Electronics for Teachers.** Fundamentals of electronics, including practical applications of electronic devices. Designed especially for prospective Industrial Arts teachers, but open to anyone. Prerequisite: E.E 21. (3W) France

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, Halles

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) Swenson, Mortimer
182 College of Engineering

104. Occupational Analysis. Principles and practice in analyzing occupations. You complete an analysis of one unit for a trade or occupation. (3W, Su) Bartel

107. Principles and Objectives of Industrial Education. A comprehensive study of the philosophy and purposes of Industrial Education programs and their place in the total program of modern education. (3F) Bartel, 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, Su) Bartel, Hailes

111. The General Shop. Comprehensive study of the types of "General Shop," its advantages and limitations; 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, Su) 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. Credit arranged. (F, S, Su) Willey

114. Problems in Driver and Safety Education. For teachers, school administrators, and others responsible for directing or supervising safe living programs in the school or community. The course includes traffic and liability law, insurance, stimulants and depressants, public relations, safety research, and applied psychology. (4W, Su) Staff

118. General Safety Education. The psychology and philosophy of accident causation and prevention in school, home, community, and industry. Stresses the various aspects of safety in many areas and includes organization, administration, and coordination of safety education programs. (3F, W, S, Su) Bartel

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) Hailes

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

122. 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. Two lectures, three three-hour labs. (5S) 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, W, Su) 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) Bartel, Mortimer

142. Plastics. Acquaints you with the new and important group of plastic materials now produced and the fundamental operations used in working these materials. Emphasis is given to the place of plastics in modern industrial arts programs. Two labs., one lecture. (3F, S, Su) Mortimer, Hailes

143. Recreational Crafts. 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) Merkley, 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) Merkley, 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: I.E. 21 and I.E. 83. One lecture, two three-hour labs. (3S) Mortimer, Swenson

146. Electronics For Teachers. This is a special course open to all Industrial Arts teachers and any others who are interested in improving their offerings in Electricity and Electronics. With the rapid advance of Electronics in modern day life, there is need for expanding the offering in this field. Purpose of this course is to stimulate such expansion. (3Su) Visiting Staff

148. General Metals. Consists of basic work in art metal, foundry, and ornamental iron. Designed especially for prospective Industrial Arts teachers, but open to any interested students. Prerequisites: Visual Arts 5, Drafting, T.E. 56 and Welding 97. (2 to 5F, S) Hailes, Merkley

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 and Technical 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

152. New Developments in Plastics. With the tremendous expansion of the Plastics industry in recent years, there is need for teachers to keep abreast of these advancements. This course will include many of the new developments with emphasis on Epoxy resins and Polyesters as they have application in school programs. (2Su) 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, Su) 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) Merkley, Swenson

176. Modern Trends in Woodwork. Designed to present the most up-to-date practices and techniques in the woodworking industry. It will be especially helpful to Industrial Arts teachers and others interested in modern trends in woodwork. Prerequisite: I.E. 63 or equivalent. (3Su) Staff

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, Su) Staff

181. Trends in Industrial Education. A preview of industrial education tomorrow; what industrial education will do. The evolution of educational and industrial thought; the source of materials to meet present day trends. (3Su) Staff

182. General Shop Laboratory. Comprehensive laboratory course covering the manipulation areas of the General Shop. Emphasis will be given in all areas of metal work, woodworking, and crafts. Designed especially for teachers needing special work in one or more areas. (3Su) Hailes, Mortimer

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, Su) Mortimer

209. Course of Study Building in Industrial Education. The significance, importance, and use of the course of study in industrial education. Actual construction of a comprehensive course of study for one of the phases of industrial education. Prerequisite: I.E. 129. Three lectures. (3F, W, S, Su) Bartel, 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, Su) Bartel, Mortimer

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 112. (3F, W, S, Su) 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, Su) Staff

259. Planning and Equipping School Shops. Principles and practice in planning and equipping modern industrial arts laboratories and trade and industrial shops. For administrators, supervisors, directors, architects, and others interested in planning new or remodeling existing facilities. Prerequisite: I.E. 110. (3F, W, S, Su) 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 instruction for trade programs. (3F, W, S, Su) 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, Su) Bartel, Mortimer

270. Seminar in Industrial Education. Gives opportunity for investigation and reporting of individual problems. (1 to 2F, W, S, Su) Bartel, Mortimer


Programs in Technical Education

Two-year Programs. Any one of the two-year technical education programs prepares the student for immediate employment in any of the technical service occupations appropriate to the training received. New and expanding industries have created many new job opportunities for technically trained men. The two-year program provides a broad educational experience for the student who does not plan to obtain a Bachelor's Degree, yet it fulfills some of the requirements for the degree where the student decides later to continue his studies.

The completion of any program entitles the student to a Certificate of Completion. In Aeronautics the Certificate would be in Airframe and Powerplant Mechanics and is based upon the satisfactory completion of the Civil Aeronautics Administration written and practical examination in Airframe and Powerplant Mechanics.

At present the University offers technician training programs in Aeronautics, Automotive, Welding, and Drafting. The programs of training are built around a core curriculum which provides for areas of specialization in the fields just mentioned. Students select their particular area of specialization and then register for the courses outlined below.

Core Curriculum

<table>
<thead>
<tr>
<th>Course</th>
<th>FIRST YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1, 2, 3</td>
<td>F  W  S</td>
</tr>
<tr>
<td>I.E. 6</td>
<td>3  3  3</td>
</tr>
<tr>
<td>Math. 34</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 11, 12, 13</td>
<td>2  2  2</td>
</tr>
<tr>
<td>T.E. 56</td>
<td>3</td>
</tr>
<tr>
<td>I.E. (Orientation)</td>
<td>2</td>
</tr>
</tbody>
</table>

Specialization

<table>
<thead>
<tr>
<th>(See lists that follow)</th>
<th>5-8 5-8 5-8</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.E.</td>
<td>1 1</td>
</tr>
</tbody>
</table>

16- 14- 14- 19 17 17
### Programs in Industrial Technology

**Four-year Degree Programs.** Students registering in the Industrial Technology program with majors in Automotive Technology or Welding Technology, will register in the general curriculum which follows. The courses constituting the Aeronautical major are listed in the Aeronautics section; those constituting the major in Automotive are listed in the Automotive section; those constituting the Welding major are listed in the Welding section.

<table>
<thead>
<tr>
<th>Course</th>
<th>SECOND YEAR</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phy. 31, Chem. 31, Geol. 31 (or Phy. 6 &amp; 7)</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Econ. 51</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I.E. 118, 120</td>
<td></td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>E.E. 21, Weld. 97</td>
<td></td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>C.E. 2</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialization</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>(See lists that follow)</td>
<td>5-8</td>
<td>5-8</td>
<td>5-8</td>
<td></td>
</tr>
<tr>
<td>P.E.</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>SPECIALIZATION</strong></td>
<td>21 18 19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aeronautics</td>
<td></td>
<td>F W S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year 5, 5a; 6, 6a; 7, 7a</td>
<td>8 8 8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Year 8, 8a; 9, 9a; 10, 10a</td>
<td>8 8 8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automotive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year 1, 2, 3</td>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Second Year 4, 5, 6</td>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Auto Body Reconditioning</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>First Year 1, 52, 3</td>
<td></td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Second Year 12, 13, 162</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Diesel Curriculum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year Auto 21, 22, 23</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Second Year Auto 4, 5, 122</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Drafting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year Math. 35, 46</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>LAEP 20</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Year C.E. 84, 82</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.E. 21, 22</td>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 106</td>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>I.E. 40</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>I.E. 68</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Welding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year 41, 42, 43</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Second Year 44, 45, 46</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

### Industrial Technology Degree Curriculum

**FRESHMAN**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Area</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>English 1, 2, 3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Math. 34, 35, 44</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>I.E. 1 (Orientation)</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>M.E. 11, 12, 13</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>M.S., A.S., or P.E.³</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Approved Electives</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>18</td>
<td>17</td>
</tr>
</tbody>
</table>

**SOPHOMORE**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Area</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chem. 10, 11</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>E.E. 21, T.E. 56</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Biology 1</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>C.E. 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speech 105, Lang. &amp; Arts. Elect...</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>M.S., A.S., or P.E.³</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Approved Electives</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>17</td>
<td>16</td>
</tr>
</tbody>
</table>

**JUNIOR**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Area</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Phys. 17, 18, 19</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Econ. 51, Soc. 70</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Physiology 4</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>I.E. 118, 120</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Upper Div. Electives</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>18</td>
<td>19</td>
</tr>
</tbody>
</table>

**SENIOR**

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Area</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 125</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>English 112</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>M.E. 110</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>B.A. 100, 147, 148</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>T.E. 150</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Upper Division Electives</td>
<td>7</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

Approved upper division electives are as follows: Econ. 106, 126, 127, 170, 180; Bus. Admin. 170, 171, 172, 174; Soc. 158; I.E. 102, 104, 144, 148; M.E. 174; Speech 108; Pol. Sci. 117, 118, 119; Psy. 155; C.E. 130; T.E. 148, 180; Pub. Health 150; Chem. 121; Eng. 147.

³Two credits are given for M.S. or A.S.
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 construction, and maintenance and repair, including hydraulic systems and instruments.

Aeronautical Technology Curriculum

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aero. 5, 6, 7</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Aero 5a, 6a, 7a</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Math. 34, 35, 45</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>English 1, 2, 3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>T.E. 56</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weld. 92</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>E.E. 21</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>M.S., A.S., or P.E.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Total | 18 | 20 | 20

SOPHOMORE

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aero. 8, 9, 10</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Aero. 8a, 9a, 10a</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>M.E. 11, 12, 13</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>C.E. 2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physics 17, 18, 19</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>A.S., M.S., or P.E.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Total | 17 | 16 | 16

JUNIOR

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem. 10, 11</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>English 112</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Aero. 100, 105, 134</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Aero. 101, 102, 126</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 125</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I.E. 120</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approved Electives</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Total | 18 | 16 | 16

SENIOR

<table>
<thead>
<tr>
<th>Course</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aero. 103, 104, 132</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>T.E. 150</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>M.E. 110</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T.E. 158</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aero. 131, 130, 37</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>M.E. 19</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Speech 105</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approved Electives</td>
<td>4</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>

Total | 17 | 17 | 18

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. Five lectures, five labs. (4 and 4F) Merrill

6, 6a. All-metal Aircraft Structure. 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. Five lectures, five labs. (4 and 4W) Merrill

Two credits are given for M.S. or A.S.

Electives must be approved by department head. May include advanced military or air science.
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. Five lectures, five labs. (4 and 4S) 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. Five lectures, five labs. (4 and 4F) 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. Five lectures, five labs. (4 and 4W) 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. Five lectures, five labs. (4 and 4S) Hill

31. Civil Air Regulations, Radio and Airway Procedures. Rules and regulations pertaining to operation of aircraft, radio, and airway procedures. Open to all students. (2F, W, S) Staff

34. Navigation. Maps, charts, and navigational problems. Required by the CAA for all pilot rating. Open to all students. (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, applications. 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. (3W) Summers

103. Elementary Aircraft Design. Basic constructional concepts relating to aircraft design. (3F) 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 or airline and airport management; unit organization; personnel problems; relationships with Civil Aeronautics Adm.; interline agreements, promotion and publicity. (3S) Staff

130. Aeronautics Seminar. Current topics in production methods, cost, design, supply and organization of interest to aeronautical technicians. (2F, W, S) 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
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

The major in Automotive Technology consists of the following courses: Auto. 1, 2, 3, 4, 5, 6, 101, 102, 103, 151, 152, I.E. 113.

The major in Diesel Technology consists of the following courses: Auto. 21, 22, 23, 4, 5, 6, 101, 122, 162, 103, 151, 152, I.E. 113.

The following courses are also required in Auto & Diesel: Welding 91 and 94 in the Freshman year, Chem. 12, and Welding 190 or 191.

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 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, 55, 61, 62 and 162.

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. (5F, W) Willey
2. Automotive Engines. Covers modern automobile engines, including cooling and lubrication. (5F, W) Willey
3. Driving Mechanisms. Clutches, transmissions, U-joints, drive lines, and rear axle assemblies. (5S) Hurst
5. Auto Electrics. Ignition, batteries, generating systems, and cranking motors. (5F, 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. (5S) Slaugh
12. Fender Reconditioning. Modern processes of straightening and priming fenders. (5F) Willey
21. Heavy Duty Chassis. Steering devices, suspension systems, brakes, frames, and alignment factors on trucks and tractors. (5S) Hurst
22. Automotive Diesel Engines. Four-stroke cycle and two-stroke cycle Diesel engines used in trucks and tractors. (5W) Hurst
23. Heavy-duty Drives. Power transmission units used on trucks and tractors. (5F) Hurst

51. Automobile Chassis. A general course on brakes and steering systems. Open to any student who wishes to learn minor service procedures. (5F)

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. (8S) Slaugh

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) Willey

55. Auto Mechanics for the Driver. For those who wish to learn minor service operations on the engine and its accessories. Includes spark-ignition and Diesel engines. (3F) Hurst

56. 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. (8S) Slaugh

57. Body and Fender Repair. Covers basic fender and body repair processes for insurance adjusters and those who desire to do their own work. (3W)

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) Slaugh

62. Upholstering. Modern automobile and furniture upholstering processes. Upholster your own units as you learn. (3W)

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. Prerequisites: Auto 2. Math 44. (3W)

103. Automatic Transmissions. Includes modern automatic transmissions and torque converters, electric clutches, and hydraulic systems. Prerequisite: Auto 3. (3W, S) Hurst

122. Fuel Injection Systems. Various types of Diesel and gasoline injection systems are included. Modern testing equipment is used. Prerequisite: Auto 22. (3W)

151. Carburetion. Combustion processes, heat cycles, and fuel characteristics are studied in connection with internal combustion engine carburetion problems. Prerequisites: Auto. 4. Math. 55. (3F)

152. Motors, Generators, and Magneto. An advanced course covering technical phases of these units. Laws of Physics are applied. Prerequisites: Auto 5 and preferably Physics 19. (3W)

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. Prerequisite: Physics 19 or equivalent work on light and color. (3F)

Welding Technology

The major in Welding Technology consists of the following courses: Welding 41, 42, 43, 44, 45, 46, 153, 154, 161, 162, 163. T.E. 57 and 148 are also required in this major.

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 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.

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)

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. (6F, 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 CAA 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

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. (3F, S) France

153, 154. 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) 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 44 or 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

He that would have the kernel must crack the shell.
College of Family Life

Dorothy T. Dyer, Dean
College of

Family Life

Department of Clothing and Textiles, 194
Department of Family Living and Child Development, 196
Department of Food and Nutrition, 199
Department of Homemaking Education, 201
Department of Household Administration, 203

Combination Major in Family Life and Secretarial or Clerical Practice, 204

Degrees Offered:

Bachelor of Science
Master of Science
The College of Family Life provides a well rounded educational program, emphasizing human relationships as well as theory and technical skills. The major purpose of the College is twofold: First, to help you prepare for more effective living in the home and the community; second, to help you prepare for a professional career in an area of your choice.

Professional opportunities open to you as a graduate in the College of Family Life include teaching, extension service, institutional management, research in Family Life, and working with children in nursery schools, day-care centers, and in hospitals.

The departments in this college are: Clothing and Textiles; Family Living and Child Development; Food and Nutrition; Household Administration; and Homemaking Education.

A Bachelor of Science degree and a Master of Science degree are offered in each of these programs. Courses may be arranged so that you can obtain your M.S. degree in Summer School, providing that your research project is done on the job during the winter months.

The curriculum for the College of Family Life is based on the various departmental major and minor requirements together with the University group requirements.

Since preparation for marriage and family living is a real concern for students anticipating marriage, or recently married, the following general education courses in marriage and family life are provided for men and women in all colleges and departments of the University. You may select those courses most appropriate to your personal needs and interests.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL-CD 20</td>
<td>Preparation for Marriage and Family Living</td>
</tr>
<tr>
<td>FL-CD 67</td>
<td>Early Childhood</td>
</tr>
<tr>
<td>BA 85</td>
<td>Personal Finance and Consumer Problems</td>
</tr>
<tr>
<td>FN 5</td>
<td>Principles of Nutrition</td>
</tr>
<tr>
<td>FN 9</td>
<td>Nutrition and Food Management</td>
</tr>
<tr>
<td>CT 6</td>
<td>Simplified Clothing</td>
</tr>
<tr>
<td>CT 15</td>
<td>Clothing Selection (For Men)</td>
</tr>
<tr>
<td>HA 149</td>
<td>Home Management</td>
</tr>
</tbody>
</table>

The woman who enters marriage unprepared beyond the honeymoon will later wonder why her marriage has failed.
Department of
Clothing and Textiles

ASSOCIATE PROFESSORS F. Gilmore, HEAD, T. Johnson; INSTRUCTOR H. Terasawa.

Office in Family Life 204

The curriculum for a major in Clothing and Textiles includes the following courses: CT 5, 6, or 8, 24, 25, 105, 125, 165, 170, 175, 185, and 191; an additional 18 credits in Visual Arts including 1, 5, 40, 115, and 135.

If you desire a minor in Clothing and Textiles, you should include CT 5 or its equivalent, 6 or 8, 24, 25, plus eight hours credit selected from other courses included in the CT major.

Fashion Merchandising. If you are preparing for Fashion Merchandising, you may wish to complete a major in CT and a minor in Business Administration, or a major in Business Administration with a minor in CT. The curriculum in Business Administration should include BA 151, 152, 161, 162, and 163.

Textile Research. If you are preparing for Textile Research, you should complete a double major in CT and chemistry.

Home Projects. A home project conducted during the summer between sophomore and junior years is required of all majors in Home Economics Education and CT. Clothing 25 is a prerequisite. Within the first two weeks of the fall quarter the project is turned into the department 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.

Graduate Study

Master of Science. The Clothing and Textile Department offers study and research to qualify you for a Master of Science degree.

Clothing and Textiles Courses

5. Art in Everyday Living. Study of the principles of design and color as related to the individual, the home, and family living. Recommended for all students in the College of Family Life. (3F, W, S) Terasawa

6. Simplified Clothing Construction. Practice in the use of commercial patterns, fitting, and construction problems. Consideration will be given to clothing selection as it relates to the individual and her needs. (3F, W, S) Gilmore

8. Basic Clothing Construction. Application of the principles of clothing construction and selection to the use of commercial patterns and their adaptation. Consideration is given to organization of procedure, basic speed construction techniques, and fitting as related to individual needs. Prerequisite: CT 5. (3F, W, S) 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


25. Intermediate 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: CT 6 or 8 and CT 5. (3W, S) Gilmore
33. Home Furnishings. To help develop an appreciation of home furnishings; their construction, selection, use and care. Consideration is given to the materials and processes involved. Recommended HA 65, CT 5 or its equivalent. (3F, W, S) Terasawa

105. History of Costume. A study of costume for men and women from ancient times to the present in relationship to the social, economic, and political influences of the times and their importance in the evolution and inspiration of modern dress. (3F) Terasawa

112. Costume Design. A practical application of the principles of design to clothing design and illustration. Emphasis is placed on originality and judgment in quality of design and color. Prerequisite: CT 5. Recommended Visual Arts 5, 135. (2W, 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: CT 25. Recommended, CT 170. (3W, S) Terasawa

141. Weaving. Fundamental principles of weaving. Emphasis on weaving for practical use—place mats and napkins, aprons, skirts, or blouse materials. (3F, W) Terasawa

165. Tailoring. Application of techniques used in tailoring suits and coats. Prerequisite: CT 25. Recommended, CT 125. (3F, W) Gilmore

170. Flat Pattern Designing. Application of the principles of dress design to the construction of patterns by flat pattern method. Emphasis on the development and use of a basic sloper; and the interpretation of a design in relation to the principles of clothing construction. Prerequisite: CT 25. (3F, 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: CH 24. Recommended, Chem. 10, 11, 12. Outside work required. (3S) Gilmore

185. Family Clothing. A study of the factors which influence clothing as it is related to family needs: the economic, sociological, and psychological influences, and the care and renovation of clothing for the family. Prerequisite: CT 6 or 8. (3W) Terasawa

190. Special Problems. Independent study of a problem in CT, in which upper division or graduate student has special interest or need. Consult department head before enrolling. Credit arranged. (2F, W, S) Gilmore

191. Seminar. Reports and discussions on newer developments in the field of clothing and textiles. (2F, S, Su) Gilmore

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


291. Graduate Seminar. Open to graduate students in CT. Credit arranged. (3S, Su) Gilmore

*Taught alternate years.
Department of
Family Living, Child Development


Office in Family Life 114

The Department of Family Living and Child Development offers work leading to the Bachelor of Science and Master of Science degrees. Two separate majors are available for either graduate or undergraduate study. You may select the one in which you are most interested. The majors are (1) Child Development, (2) Family Life Education. Either major represents a desirable area of study if you are interested in children or family life, either professionally or as a prospective parent.

The major in Child Development should prepare you for a more satisfying role as a parent and, professionally, for: teaching in and conducting a nursery school; teaching in kindergarten or elementary school; extension service positions in child development and parent education; play director in a children's hospital; study toward an advanced degree.

The major in Family Life Education should contribute to your happiness in family living and, professionally, for: teaching in a family life and social science program; extension service work in family relations; study toward an advanced degree in marriage counselling or family relations.

Child Development Major. The curriculum for a major in Child Development includes the following: FL-CD 108, 150, 164, 174, 175; an additional 15 credits to be selected from FL-CD 20, 110, 115, 120, 125, 130, 180, 185; Education 133; English 122; Physical Education 81, 83, 84; Psychology 112, 121, 123, 135; Sociology 160; Social Work 165, 177; Speech 118, 167; Zoology 102. College of Family Life electives, 3 to 6 hours selected from Clothing & Textiles 5, 185; Food & Nutrition 9; Household Administration 149, and 155 or Business Administration 85.

Family Life Education Major. The curriculum for a major in family life education includes the following: FL-CD 110, 120, 150, 180, and either 67 or 100. An additional 21 hours may be selected from related and supporting courses such as FL-CD 20, 100, 108, 115,
Family Living 197

125, 185; Sociology 140, 160, 161, 170; Social Work 162, 165, 178; Psychology 112, 121, 135, 145, 161, 183; Household Administration 149; College of Family Life Electives, 3 to 6 hours.

Family Life Education Minor. The curriculum for a minor in family life education is: FL&CD 110, 120, 180, and either 67 or 100, with at least 6 credit hours selected from other courses included in the family life education major.

Teacher Certification. If you expect to teach in kindergarten or elementary school, as a child development major, or a high school as a family relations major, you must meet the state requirements for teacher certification. It is recommended that you take a teaching certificate with your major. The teaching certificate fills the requirements for a minor for graduation in child development. Majors in Family Life Education should take a teaching minor in some subject commonly taught in the high school. For most students, a minor in history, supported by a broad background in the social sciences, is recommended.

Counseling Service. The Department of Family Living and Child Development provides pre-marital, marriage, and family counseling for students, as part of a University-wide counseling program under the direction of the Coordinator of Counseling Services. Application for counseling such problems as mate selection, husband - wife relationships, and parent - child relationships may be made to the department, or to the Coordinator of Counseling Services.

FL&CD Courses

20. Preparation for Marriage and Family Living. Expectations of modern marriage; understanding of self; the problems of dating; courtship; engagement; relationships of husband and wife; family problems and adjustments. For men and women. (3F, W, S)

Skidmore, Dyer, Christensen

67. Early Childhood. 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. (3W, F, S)

Lewis, Christensen

65. Preschool Laboratory. Directed observation in the Child Development Laboratory. Recommended to parallel FL&CD 67. (2F, W, S)

Eames

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, Su) Carter

105. 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. (2F, W, S)

Lewis, Christensen

110. Family Development. The dynamic process of family growth and development; changing needs, problems and behavior of families at different levels of development; the individual in the family. (5F, Su) Dyer, Skidmore


Lewis

120. Marriage. Engagement; marriage relationships; understanding of self. For men and women. (3F, W, S)

Carter

125. Materials and Procedures in Family Life Education. Study of parent, teacher, and community needs in relation to problems of education for family life. In-service training for teachers and group leaders in family life programs. Methods of family life education. (3S, Su)

Dyer

127. Family Life Workshop. Designed for teachers and leaders to study the needs of parent, teacher, youth and community in relation to problems of education for family life. Resources, procedures and organization techniques for initiation of and planning on-going programs. (2Su)

Skidmore
Man is a frail reed, but he is a thinking being... and therein lies his strength.
The Food and Nutrition Department has important contributions to make to the life of every person, and provides experiences that are valuable both in personal and family living. Its courses are necessary for the student preparing for high school teaching. These courses include FN 24, FN 25, FN 140, and one other elective in upper division courses.

As a major in the department, you may specialize in either one of two areas, Food and Nutrition or Dietetics. The major in food and nutrition is well prepared for a number of positions in food and research programs. A major in dietetics is prepared to take a student internship in some approved hospital, university, or industrial plant operation. At the end of the internship year, the student is qualified to become a professional dietitian.

Majors in Food and Nutrition are required to take the courses as listed below:

Chemistry 10, 11, 12, and 190; Physiology 4; Bacteriology 70; FN 24, 25, 140, 141, and 146 plus:

A minimum of ten hours to be selected from FN 100, 107, 135, 145, 150, 180,* 182,* and 184* plus:

A minimum of eighteen hours in the other areas in the College of Family Life. Classes strongly recommended in these other areas are: CT 6 and 10, FL and CD 20 and 67, HA 149 and 150 or 151, HE 120* and BA 85 plus:

A minimum of 15 hours to be selected from among at least three of the following supporting fields: Psychology, speech, English, visual arts, journalism, economics, history, and political science, sociology, languages, and physics.

*Requirements set up by the American Dietetics Association and must be taken by the dietetics major. Further ADA requirements are: BA 100 and 151, Psychology 102, and Purchasing.

The course requirements, including those of the University, total 141 hours. Since 180 hours, plus P.E. are required for graduation, the foods major has 45 hours for elective courses which can provide depth or breadth to her education as she chooses.

Minor in Food and Nutrition. Students from other colleges, as well as students from other areas in the College of Family Life, have the privilege of minor in the Food and Nutrition Department.

Required courses for a minor are: FN 24, FN 25, FN 140, plus:

Five hours to be selected by the student from among the remaining courses offered in the department.

Graduate Study

Master of Science Degree. The Food and Nutrition Department offers study and research to qualify you for a Master of Science degree. The following courses are offered on the graduate level: Food and Nutrition 201, 202, 203, 207, 210, 230, 231, 243, 290, and 291.
Food and Nutrition Courses

5. Principles of Nutrition. The relation of food to family health; factors influencing the body's nutritive requirements; problems applicable to individual interests. (SF, W, S) Rowland

9. Nutrition and Food Management. A study of the scientific principles of nutrition and their application to the selection, purchasing, and preparation of family meals. For men and women. Not to be taken as part of the Food and Nutrition major. Two lectures and 1 lab. (SF, W, S) Ream


25. Meal Preparation for the Family. Planning, preparing, and serving family meals with consideration of nutritional adequacy and cost. Prerequisite: FN 24. (SF, W, S) Rowland, Merkley

100. Quantity Food Preparation for School Lunch and Special Occasions. Meets needs of Homemaking Education students. Emphasis on planning balanced school lunches and on organization, preparation, and service of foods in large quantities for special events. (3S) Staff


135. Weight Control. Individual help will be given to those students who need to lose or gain weight. Diets will be planned to fit the individual's needs. Help with personal problems will be given by personal counseling sessions. (2S) Wilcox, Dyer

140. Nutrition. Fundamental principles of human nutrition and their application to the individual and family group. Laboratory problems include a dietary study, animal experimentation and determination of nitrogen, mineral, and ascorbic acid. Three lectures and two labs. Prerequisite: Organic Chemistry. (SF, W) Merkley, Wilcox

141. Advanced Nutrition. Nutritional requirements of the mother during pregnancy and lactation; nutrition of child through infancy to adolescence. (2S) Wilcox

145. Diet Therapy. Application of dietetic principles to problems of diseases, with calculation of diets in disease. Prerequisite: F & N 140. (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, one two-hour lab. (2F, Su) Merkley

150. Seminar. Reports and discussions on current literature. (1W) Staff

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. (5W) Staff

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. (6S) Staff

184. Cost Control in Food Institutions. Varied aspects of money management as it affects food service in institutions. (2W) Staff

185. Recent Progress in Human Nutrition. A review of recent developments in human nutrition. You are required to participate in the Weight Control Conference, held on Wednesdays 3 to 5. (3 Su) Wilcox

190. Special Problems. Open to qualified F & N majors upon consultation with instructor. Credit arranged. (F, W, S, Su) Wilcox, Merkley

201. Laboratory Methods in Food and Nutrition. Problems in food and human nutrition, including nitrogen, mineral and vitamin determinations. Prerequisite: Chemistry 190 or 191, or equivalent. 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. Credit arranged. (F, W, S) Wilcox


**Homemaking Education 201**


231. Readings in Nutrition. Critical review of literature in the field of vitamins and mineral metabolism. Prerequisites: FN 140. (2S) Wilcox

243. Nutrition and Growth. Relation of nutrition to growth from the prenatal period to old age. (2S) Wilcox

Nutrition and Biochemistry Seminar. (See AH 270)

290. Special Problems. Credit arranged. (F, W, S, Su) Staff

291. Graduate Seminar. Credit arranged. (F, W, S) Wilcox

*Taught alternate years.

**Department of**

**Homemaking Education**

**ASSISTANT PROFESSOR V. H. Harder, HEAD; INSTRUCTOR M. B. Merkley.**

**Office in Family Life 104-B**

Purpose of Homemaking Education is to prepare you for professional employment as a homemaking teacher and to provide experiences valuable to you in personal and family living. A Bachelor of Science degree and a Master of Science degree may be earned in Homemaking Education.

In addition to filling University group requirements you should keep in mind Homemaking Education prerequisites: Psychology 53, Business Economics 85, Chemistry 10, 11, 12, Family Health 152.

The composite major requirements are: Clothing and Textiles 5, 8, 24, 25, 33, and 165, Family Living and Child Development 67, 68, and 108. An additional six hours must be selected from FLCD courses 110, 120, 125, 180, 185. Food and Nutrition 24, 25, 140. An additional three hour class selected from FN 100, 107, 135, 141. Household Administration 65, 149, 150, 155.

A Home Project, conducted during the summer following completion of Clothing and Textiles 25, is required of all majors and Homemaking Education. This project is under the direction of the Clothing and Textiles Department.

You may wish to consider developing a subject interest into a teaching minor: e.g., Visual Arts, Secretarial Science, English, Music, Physical Education, Social Science, Chemistry, Journalism, etc.

Certification Requirements for Teachers of Vocational Homemaking in Secondary Schools.

Family Living and Child Development 100 or Psychology 100; Psychology 102; Public Health 154 or 155; Education 112, 114; Homemaking Education 120, 121, 122.

An additional three hours selected from Education courses 111, 113, 161, or 162.

A total of 33 credits in professional education (outlined above) must be taken to meet requirements for the General Secondary Certificate, which includes the Vocational Homemaking Certificate.

**Services Available to Teachers:**

(1) Guidance and help in meeting requirements for renewing certificates; (2) Opportunity to meet certification requirements; (3) Ad-
Advanced study leading to Master of Science degree in Homemaking Education; (4) In-service Education.

Graduate Study

The College of Family Life 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 Homemaking 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 guide you on the thesis problem. (See Catalog 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 as outlined in the Homemaking Education curriculum. Other recommended courses are: Extension Methods 151; Journalism 12 or 112; Speech 21; and Sociology 141. 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.

Homemaking Courses

120. Methods in Teaching Homemaking. Guiding pupil development in basic classroom procedures. Curriculum planning with appropriate use of text books, audio visual materials, home experiences and projects, evaluative materials. Classroom management and responsibilities. Development of a philosophy of homemaking education in keeping with changing conditions affecting family living. Prerequisite or parallel: Psychology 102. (3F, S) Harder

121. Problems in Teaching Homemaking. Opportunity to structure Homemaking units for off-campus classroom teaching in 122. Visual aids are developed; demonstrations, projects, and related activities are planned. This course is taken with Homemaking Education 122 and Principles of Vocational Education 112. It is important that you register with the instructor of Homemaking Education 121 and 122 one quarter prior to your student teaching. This provides the time necessary to arrange teaching assignments with cooperating schools. (4F, W, S) Harder

122. Student Teaching in Homemaking Education. Observation and teaching of homemaking under supervision in public schools having cooperative arrangements with this quarter and teaches a full homemaking program each day in an approved school. Prerequisites: Homemaking Education 120, 121. (8F, W, S) Staff

199. Special Problems in Homemaking Education. Developed around individual needs not otherwise provided for in curriculum. (1 to 2F, W, S, Su) Staff

210. Research for Master's Thesis. Credit arranged. (F, W, S, Su) Staff

217. Current Developments in Homemaking Education. Newer developments in homemaking at the secondary level. Serves advanced undergraduate or graduate students. You may arrange with instructor to substitute this class for Homemaking Education 120. (3Su) Harder

237. Seminar. Opportunity for investigation and reporting on individual problems. Credit arranged. (F, W, S, Su) Staff
Department of

Household Administration

ASSOCIATE PROFESSOR R. H. Gardner; ASSISTANT PROFESSOR E. Nyman, ACTING HEAD; INSTRUCTOR E. Ream.

Office in Family Life 204-B

The Department of Household Administration provides an opportunity for a student to combine training for homemaking with training for professional employment. The program provides an opportunity for you to select courses from the academic offerings of the entire University.

A major in the department combined with a minor in either Clothing and Textiles, Food and Nutrition, or Family Living and Child Development, would give training for a wide variety of commercial and teaching openings. A Master's degree prepares one for University teaching.

Major: The curriculum for a major in Household Administration includes: H.A. 65, 100, 149, 150 or 151, 155; Clothing-Textiles 5, 33; Foods-Nutrition 24, 25; Family Life-Child Development 100, 20 or 120, 110; Landscape Architecture 3; Speech 105; Journalism 112.

Minor: The classes recommended for a minor include: C.T. 6, F.N. 9, FLCD 67, FLCD 20 or 120, H.A. 149. The minor should be developed to meet individual needs of the students.

Suggested electives: English 5, 34, 35, 36, 53, 58; History 4, 5, 6, 13, 14; Political Science 5; Horticulture 4, 11; Speech 83; Journalism 45; Philosophy 45; Accounting 20; Clothing and Textiles 24; Economics 106, 170; FAM 183; FAA 135; Food and Nutrition 100; Clothing and Textiles 185; Physical Education 81, 83; Horticulture 100, 118; Sociology 170, 130; Psychology 145, 185; any upper division Literature, History or Political Science.

Household Administration Courses

65. Housing. A consideration of various aspects of housing: finance, location, planning and orientation, construction, remodeling and expansion. (3F, W, S) Ream

100. Household Equipment. Principles of selection, operation, care and arrangement of household equipment. (2F, S) Nyman

149. Home Management. A study of the management of family resources in the achievement of family goals. (3F, W, S) Nyman

150. Home Management House. Residence in a Home Management House for a five-week period provides experience in management and democratic family living. Application must be made in advance of registration with resident advisor. Girls without required prerequisites may apply for one five-week period during winter quarter. Prerequisites FN 24, 25; HA 149. (4F, W, S, Su) Nyman

151. Home Management Problems. Similar to 150; for married students. Provides guidance in the management of their own home. (4S, Su) Nyman

155. Family Finance. The planning of family finances and a study of factors that influence the decision and planning in the economic area. (2F, W) Nyman

160. Special Problems. Individual problems for qualified students upon consultation with instructor. Credit arranged. (F, W, S) Staff

260. Special Problems. Credit Arranged. (F, W, S) Staff
**Combination Major in**

**Family Life and Secretarial or Clerical Practice**

This is a program for women who desire basic training for 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 Family Life courses and either the Secretarial or the Clerical courses here listed, plus the University group requirements listed in the Catalog.

### FAMILY LIFE COURSES

**Household Administration**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.A. 65</td>
<td></td>
</tr>
<tr>
<td>H.A. 100</td>
<td></td>
</tr>
<tr>
<td>H.A. 149</td>
<td></td>
</tr>
<tr>
<td>B.E. 85</td>
<td></td>
</tr>
</tbody>
</table>

**Clothing Textiles**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.T. 5</td>
<td></td>
</tr>
<tr>
<td>C.T. 6 or 8</td>
<td></td>
</tr>
<tr>
<td>C.T. 24</td>
<td></td>
</tr>
<tr>
<td>C.T. 83</td>
<td></td>
</tr>
<tr>
<td>C.T. 185</td>
<td></td>
</tr>
</tbody>
</table>

**Foods and Nutrition**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>F.N. 2</td>
<td></td>
</tr>
</tbody>
</table>

**Family Life-Child Development**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLCD 67</td>
<td></td>
</tr>
<tr>
<td>FLCD 68</td>
<td></td>
</tr>
<tr>
<td>FLCD 108</td>
<td></td>
</tr>
<tr>
<td>FLCD 100</td>
<td></td>
</tr>
</tbody>
</table>

### SECRETARIAL COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.S. 30</td>
<td></td>
</tr>
<tr>
<td>S.S. 51</td>
<td></td>
</tr>
<tr>
<td>S.S. 43</td>
<td></td>
</tr>
<tr>
<td>S.S. 65</td>
<td></td>
</tr>
<tr>
<td>S.S. 92</td>
<td></td>
</tr>
<tr>
<td>S.S. 167</td>
<td></td>
</tr>
<tr>
<td>S.S. 175</td>
<td></td>
</tr>
<tr>
<td>S.S. 186, 187</td>
<td></td>
</tr>
</tbody>
</table>

### CLERICAL COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.S. 30</td>
<td></td>
</tr>
<tr>
<td>S.S. 51</td>
<td></td>
</tr>
<tr>
<td>S.S. 43</td>
<td></td>
</tr>
<tr>
<td>S.S. 65</td>
<td></td>
</tr>
<tr>
<td>S.S. 92</td>
<td></td>
</tr>
<tr>
<td>S.S. 94</td>
<td></td>
</tr>
<tr>
<td>S.S. 98</td>
<td></td>
</tr>
<tr>
<td>S.S. 167</td>
<td></td>
</tr>
<tr>
<td>S.S. 175</td>
<td></td>
</tr>
<tr>
<td>S.S. 186, 187</td>
<td></td>
</tr>
<tr>
<td>B.A. 30</td>
<td></td>
</tr>
<tr>
<td>B.A. 5</td>
<td></td>
</tr>
<tr>
<td>B.A. 1</td>
<td></td>
</tr>
<tr>
<td>B.A. 2</td>
<td></td>
</tr>
</tbody>
</table>

**Total 42**

*Required classes*

### MANKIND WILL BE BETTER WHEN WOMANKIND IS BETTER.
College of Forest, Range and Wildlife Management

J. Whitney Floyd, Acting Dean
College of

Forest, Range and Wildlife Management

Department of Forest Management, 209

General Forestry, 209
Timber Management, 209
Forest Recreation Management, 209

Department of Range Management, 213

General Range Management, 213
Forest-Range Management, 213
Watershed Management, 214

Department of Wildlife Management, 216

Game Management, 216
Fishery Management, 216

Degrees Offered:

Bachelor of Science
Master of Forestry
Master of Science
Doctor of Philosophy
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.

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 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.

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. Mere field ability is not sufficient. A prospective student should realize that forestry and related fields are highly technical professions. They require high aptitude for scholarship and technical development. Success also is correlated with personality and ability to deal with people.

Application forms may be obtained from the Admission's Office. Transfer students should send, in addition to their college transcript,
a letter of recommendation from their former dean or adviser and their high school transcript. These should be sent directly to the dean of the Forestry College.

*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 that 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 seniors 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 transportation 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 through 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 English 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.
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, and watershed management. 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 departments 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**

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter taught and credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1, 2, 3</td>
<td>3 3 3</td>
</tr>
<tr>
<td>Mathematics 34, 35, 44</td>
<td></td>
</tr>
<tr>
<td>Chemistry 10, 11, 12</td>
<td>5 5 5</td>
</tr>
<tr>
<td>Forest Management 1</td>
<td>2</td>
</tr>
<tr>
<td>Range Management 1</td>
<td>1</td>
</tr>
<tr>
<td>Wildlife Management 1</td>
<td>1</td>
</tr>
<tr>
<td>Animal Husbandry 1, 2</td>
<td>3 2</td>
</tr>
<tr>
<td>Engineering Drawing 60</td>
<td>1</td>
</tr>
<tr>
<td>M.S., A.S., or P.E. 4</td>
<td>1-2 1-2 1-2</td>
</tr>
</tbody>
</table>

**SOPHOMORE YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter taught and credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botany 24, 25, 30</td>
<td>5 5 5</td>
</tr>
<tr>
<td>Botany 120</td>
<td>5</td>
</tr>
<tr>
<td>Civil Engineering 81, 80</td>
<td>3 3</td>
</tr>
<tr>
<td>Physics 6</td>
<td>5</td>
</tr>
<tr>
<td>Agronomy 58</td>
<td>5</td>
</tr>
<tr>
<td>Economics 51</td>
<td>5</td>
</tr>
<tr>
<td>Speech 105</td>
<td>3</td>
</tr>
<tr>
<td>Geology 3</td>
<td>5</td>
</tr>
<tr>
<td>M.S., A.S., or P.E. 4</td>
<td>1-2 1-2 1-2</td>
</tr>
</tbody>
</table>

*P.E. is 1 credit; M.S. and A.S. are each 2 credits.

*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.

*Not required of students taking the Timber Management option.

*Not required of students who have had adequate training in engineering-mechanical drawing in high school.

*P.E. is 1 credit; M.S. and A.S. are each 2 credits.
SUMMER CAMP

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Management 96</td>
<td>3</td>
</tr>
<tr>
<td>Forest Management 97</td>
<td>4</td>
</tr>
<tr>
<td>Range Management 98</td>
<td>1</td>
</tr>
<tr>
<td>Wildlife Management 99</td>
<td>1</td>
</tr>
</tbody>
</table>

A—GENERAL FORESTRY

JUNIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter taught and credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Management 106, 107</td>
<td>F W S 4 3</td>
</tr>
<tr>
<td>Forest Management 112, 113</td>
<td>3 2</td>
</tr>
<tr>
<td>Forest Management 114, 115</td>
<td>3 3</td>
</tr>
<tr>
<td>Forest Management 118</td>
<td>3</td>
</tr>
<tr>
<td>Forest Management 132</td>
<td>3</td>
</tr>
<tr>
<td>Forest Management 137</td>
<td>3</td>
</tr>
<tr>
<td>Forest Management 146</td>
<td>3</td>
</tr>
<tr>
<td>Range 126</td>
<td>5</td>
</tr>
<tr>
<td>Wildlife 150</td>
<td>5</td>
</tr>
</tbody>
</table>

SENIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter taught and credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Management 119</td>
<td>F W S 3</td>
</tr>
<tr>
<td>Forest Management 120</td>
<td>3</td>
</tr>
<tr>
<td>Forest Management 121</td>
<td>3</td>
</tr>
<tr>
<td>Forest Management 122, 123</td>
<td>4 3</td>
</tr>
<tr>
<td>Forest Management 126</td>
<td>3</td>
</tr>
<tr>
<td>Forest Management 133</td>
<td>2</td>
</tr>
<tr>
<td>Forest Management 134</td>
<td>3</td>
</tr>
<tr>
<td>Forest Management 147</td>
<td>2</td>
</tr>
<tr>
<td>Range 131</td>
<td>4</td>
</tr>
<tr>
<td>Range 162</td>
<td>5</td>
</tr>
<tr>
<td>Range 180</td>
<td>4</td>
</tr>
<tr>
<td>English 111</td>
<td>3</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Quarter taught and credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Management 116</td>
<td>F W S 2</td>
</tr>
<tr>
<td>Forest Management 123</td>
<td>3</td>
</tr>
<tr>
<td>Forest Management 129</td>
<td>2</td>
</tr>
<tr>
<td>Forest Management 130</td>
<td>4</td>
</tr>
<tr>
<td>Forest Management 131</td>
<td>3</td>
</tr>
<tr>
<td>Zoology 105</td>
<td>3</td>
</tr>
<tr>
<td>Botany 140</td>
<td>4</td>
</tr>
</tbody>
</table>

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 |
-------------------------|---------------------------|
Landscape Architecture 130 | F W S 2                   |
Forest Management 138    | 2                      |
Forest Management 139    | 3                      |
Civil Engineering 120    | 4                      |
Landscape Architecture 31 | 3                      |

3Taken in spring quarter of freshman year.

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 how closely related your undergraduate work is to forestry. For this program you should apply as described in the paragraph above.
Graduate assistantships are available to graduate students in Forest Management. Application for fellowships 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


96. Forest Surveying. Practical field problems in surveying methods commonly employed in Forest, Range, and Wildlife Management. Lab. Fee $5. (Summer camp 4 credits) Tocher, Daniel, Moore, Turner

103. Silviculture and Dendrology. Basic Silvics: Silvicultural systems; western conifers and eastern hardwoods; elements of regional silviculture; characteristics of tree species which influence silvicultural practices. Not open to Forest Management majors. Prerequisite: Forest 115. (3W) 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 108. (3S) Moore

105. 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: Forest Camp. (4W) Moore

106. 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) Kears

113. Dendrology II. Conifers. Identification, distribution, and silvics of the more important forest trees of the United States. Prerequisite: Summer Camp. (2W) Kears

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, suppression and suppression of forest and range fires, including economic and physical effect; fire behavior. Field trips. (3F) Floyd

119. Forest Protection II. Problems of administration and economics in protecting forests from biological enemies. Prerequisite: Forestry 115, 121. (3W) 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) Kears

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) Kears
212 College of Forestry

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 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) Kearns

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 aerial photographs. Prerequisite: Forestry 97. (3F) Tocher

137. Improvements and Recreation. Recreational use of forests and the classifications and planning of areas suitable for this purpose. Field trips. (3F) Floyd

138. Recreational Land Classification. Land classifications and economies of various forms of forest recreational use. (2S) Floyd

139. Recreational Structures. Construction of various forest recreational facilities. (3W) Tocher

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. (2W) 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) Kearns

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

*Taught alternate years.

Select your friend with a silk-gloved hand and hold him with an iron gauntlet.
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 a 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 available.

Many range management graduates also enter private work, 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 outlined 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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Minimum Quarter-hour credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>9</td>
</tr>
<tr>
<td>College algebra and trigonometry</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry, including organic</td>
<td>15</td>
</tr>
<tr>
<td>Botany, including taxonomy</td>
<td>15</td>
</tr>
<tr>
<td>Physics</td>
<td>5</td>
</tr>
<tr>
<td>Economics</td>
<td>5</td>
</tr>
<tr>
<td>Soils</td>
<td>5</td>
</tr>
<tr>
<td>Geology</td>
<td>5</td>
</tr>
</tbody>
</table>

During the junior and senior years you must complete the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Minimum Quarter-hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant ecology</td>
<td>5</td>
</tr>
<tr>
<td>Plant physiology</td>
<td>5</td>
</tr>
<tr>
<td>Range plant communities</td>
<td>10</td>
</tr>
<tr>
<td>Watershed management</td>
<td>4</td>
</tr>
<tr>
<td>General range management</td>
<td>5</td>
</tr>
<tr>
<td>Range field problems</td>
<td>3</td>
</tr>
<tr>
<td>Range technical problems</td>
<td>3</td>
</tr>
<tr>
<td>Range improvement</td>
<td>3</td>
</tr>
<tr>
<td>Range seminar</td>
<td>6</td>
</tr>
</tbody>
</table>

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 op-
tion provides training for multiple use management of forest and range lands. The student is especially fitted for work with the U. S. Forest Service.

(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.

Minor in Range Management. The following courses in Range Management are suggested for students who wish to minor in the 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 163, Range Improvement, 3 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, including exemption from non-resident tuition fees. Such assistantships involve part-time work for the Department. 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 problems and methods in range management. (1W) Stoddart

98. Range Analysis. Field identification of summer range plants. Methods and techniques of vegetation analysis. Practice in range allotment analysis. (1 credit, Summer Camp) Box

126. Plant Ecology. Role of heredity and environment in plant behavior; plant succession, competition and indicators; analysis of habitat factors influencing plant growth and distribution. Prerequisite: Plant taxonomy, general soils. Lab fee $1. (5F, S) Stoddart

130. Grassland Communities. Composition, distribution, successional patterns, and management of grassland ranges. Prerequisite: Plant taxonomy. Two lectures, one lab. (3W) Box

131. Forest Range Communities. Composition, distribution, successional patterns and management of forested ranges. Prerequisite: Plant Taxonomy. Two lectures, two labs. Lab fee $2. Saturday field trips may be scheduled. (4F) Box

132. Desert Communities. Composition, distribution, successional patterns, and management of desert ranges. Prerequisite: Plant taxonomy. Two lectures, one lab. Lab fee $4. Saturday field trips may be scheduled. (3S) Box

160. Principles of Managing Range Lands. A general course designed to give a knowledge of how to evaluate, manage, and perpetuate ranges. (5F) Cook

161. Range Analysis Techniques. Theory, application, and limitations of vegetation analysis methods and techniques. Field prac-
195. Range Problems. Individual study and research upon a selected range problem. Prerequisite: Faculty approval. (1 to 3 F, W, S, Su) Staff

196, 197. Range Field Problems. Field study of range operation and research. Lab. fee $35. Prerequisite: Plant Ecology and Plant Communities. (3F) Box

200. Range Thesis. Original research and study on a problem in range management. (1 to 15 F, W, S, Su) Staff

204. Land Use Seminar. Current problems and practices in wildland management, with emphasis on western range. (2F) Smith

205. Seminar in Range Nutrition. Problems in management and research in the field of plant and animal nutrition on range land. Prerequisite: Feeds and Feeding. (3W) Cook


207. Graduate Seminar. Review of current research in range management by graduate students and faculty. (18) Box

210. Environmental Factors. Environmental factors and interaction between organisms and environment as found on native range land. Prerequisites: Plant Ecology and Plant Physiology. (3W) Goodwin

211. Synecology. Development, structure analysis, and classification of native range vegetation. Prerequisite: Plant Ecology. (3W) Goodwin


281. Advanced Range Economics. Advanced study of economic factors affecting conservation practices with special consideration to range lands and range operations. Prerequisite: Range Economics. (2S) Smith

*Taught alternate years.

He who limps should visit him who has broken his leg.
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 Game Management Option stresses ecological, economic, and management 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 also 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 Civil Service entrance examinations of the Forest Service. Summer Camp and some upper division forestry courses are recommended.

During the Freshman and Sophomore years you should complete the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1, 2, 3</td>
<td>9</td>
</tr>
<tr>
<td>College algebra and trigonometry</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry, including organic</td>
<td>15</td>
</tr>
<tr>
<td>Botany, including taxonomy</td>
<td>15</td>
</tr>
<tr>
<td>Zoology: Invertebrate, vertebrate and entomology</td>
<td>15</td>
</tr>
<tr>
<td>Physics</td>
<td>5</td>
</tr>
<tr>
<td>Economics</td>
<td>5</td>
</tr>
<tr>
<td>Soils</td>
<td>5</td>
</tr>
<tr>
<td>Survey courses in forest, range, and wildlife management</td>
<td>4</td>
</tr>
<tr>
<td>Military or Air Science, or Physical Education</td>
<td>6</td>
</tr>
</tbody>
</table>
**Wildlife Management 217**

**Graduate Study**

The advanced degrees, Master of Science in fisheries management or game management and Doctor of Philosophy in fishery biology or wildlife biology, 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 Department of Wildlife Management. 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) Sigler
2. **Wildlife Practice.** Integrated studies of wildlife populations in relation to land uses. Lab. fee $5. (1 Summer Camp) Kelker
3. **Principles of Wildlife Management.** Characteristics of animals and their habitat in relation to general management practices. (3W) Stokes
4. **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. (3F) Stokes
5. **Waterfowl and Furbearer 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

**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.**
218 College of Forestry

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. (5F, S)

153. Management of Big Game. 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)

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. (3F)

157, 158, 159. Wildlife Seminar. Discussion of current developments in wildlife management. Two recitation periods per week. (1P, 1W, 1S)


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)

162. Fishery Biology. Anatomy, development, respiration, and excretion of fresh water teleosts. Two lectures, two labs. (4W)

165. Fishery Management. Principles and techniques of lake, pond and stream improvements; ecology of game fishes, propagation methods, common fish diseases. Prerequisite: Zoology 155. Two lectures, one lab. (3S)


170. Wildlife Problems. Individual study and research upon a selected wildlife problem. (1 to 5F, W, S, Su)

171. Field Problems. Study of wildlife management operations of various agencies in the West. Fee $35. (2F, S)

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)

*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. (3W)

210. Advanced Field Problems. Field training in techniques not covered in undergraduate courses. (1 to 5F, W, S)

253. Advanced Big Game Management. Population dynamics, census methods, hunting regulations, and management plans. Prerequisite: Wildlife 153 or equivalent. Two lectures, one lab. (3W)

257. Graduate Seminar. Discussion of problems in selection and writing of research projects; discussion of current problems. (2F)

258. Graduate Seminar. Discussion of current investigations by class members and by representatives of state and federal agencies. (2W)

259. Graduate Seminar. Review of current literature. Discussion of the completion and publication of students’ technical papers. (2S)


261. Advanced Limnology. Advanced study of factors affecting productivity of fresh water. Prerequisite: Wildlife 161 or equivalent. Two lectures, two labs. (4F)

270. Research and Thesis. Credit for field or laboratory research, library work, and thesis writing. (5 to 15F, W, S, Su)
Division of
Military Science and Tactics
and Air Science
Division of Military Science and Tactics and Air Science

Joint Army-Air Force Courses and Activities, 222

Department of Military Science and Tactics, 224
  Army ROTC, 224
  Basic Military Science, 226
  Advanced Military Science, 226

Department of Air Science, 227
  Air Force ROTC, 227

Degrees Offered:
  Bachelor of Science
  also, ROTC Commission
Division of

Military Science and Tactics
and Air Science

J. Elliot Cameron, UNIVERSITY ROTC COORDINATOR
Colonel C. H. Anderson, PROFESSOR OF MILITARY SCIENCE AND TACTICS
Major L. R. Pugh, Jr., PROFESSOR OF AIR SCIENCE

Each male citizen of this country 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 man 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. You may initially choose which program you wish to enter; however, subsequent transfer between units is not generally approved because of the difference in curriculum.

Army and Air Force ROTC are four-year programs, each consisting of two two-year courses. The Basic course is normally taken during your 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 your 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 becomes 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 leadership ability, academic standing, officer potential, and interest in the military. Satisfactory completion of the Basic course is normally a pre-requisite for your 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 selected students who maintain satisfactory grades in their academic subjects and in ROTC. Upon completing the program and being commissioned, you normally enter on active duty with the Armed Forces as a second lieutenant in the service in which you are commissioned. The period of active service required of ROTC graduates depends on the requirements of the service concerned.

Enrollment Regulations. ROTC leadership, drill and command periods are an integral part of the ROTC program. Registration for
one of these periods is required of all ROTC students. ROTC Band students drill separately under the supervision of the University director of bands.

A combination uniform and laboratory fee of $5 is required of all ROTC students and is paid at the time of initial enrollment each year.

General Requirements
(A) Basic Course:
(1) Be a citizen of the United States.
(2) Not less than 14 years of age.
(B) Advanced Course:
(1) Satisfactorily complete the basic course, or have equivalent credit.
(2) 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.
(3) Obtain a satisfactory score on the Army or Air Force Qualification Test which is administered to sophomore students.
(4) 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.
(5) 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.
(6) Transfer membership in any reserve organization of the Armed Forces to the respective ROTC service. Staff personnel of the department will assist you as necessary.

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, or first quarter transfer students 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 Departments." Company "G," 9th Regiment is located at USU. Membership in Pershing Rifles is open to any Army or Air Force basic or advanced cadet. Included within the Pershing Rifles is a Rifle Company to promote marksmanship among Army and Air Force cadets. The Company competes in several regional and national invitational tournaments. The Pershing Rifle Drill Company enjoys a national reputation as a drill unit, and is open to all members of the Pershing Rifles.

Scabbard and Blade. The National Society of Scabbard and Blade is an honorary society of Advanced Army and Air Force Cadets. Company "A," 4th Regiment, was organized at USU in 1922. Members are dedicated to unite in closer relationship the military departments of the University, and to perform such services to the University and the community which will result in the spreading of intelligent infor-
mation concerning the military requirements of our country. Members are invited to join after being selected from among the outstanding advanced cadets on campus by the society's current membership.

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. (2F, 2W, 2S)  
4B, 5B, 6B, ROTC Band. Second Year. (2F, 2W, 2S)

Military and Air Science 223

Sponsor Corps Courses

51, 52, 53. Military Science Sponsors Drill, Freshmen. A course in leadership organization and drill for women elected to Corps of Sponsors (1F, 1W, 1S)  
54, 55, 56. Military Science Sponsors Drill, Sophomores. (1F, 1W, 1S)  
151, 152, 153. Military Science Sponsors Drill, Juniors. (1F, 1W, 1S)  
154, 155, 156. Military Science Sponsors Drill, Seniors. (1F, 1W, 1S)

Pershing Rifles Courses

37, 38, 39. Pershing Rifle Drill, Freshmen. (1F, 1W, 1S)  
40, 41, 42. Pershing Rifle Drill, Sophomores. (1F, 1W, 1S)  
137, 138, 139. Pershing Rifle Drill, Juniors. (1F, 1W, 1S)  
147, 148, 149. Pershing Rifle Drill, Seniors. (1F, 1W, 1S)

Prayer should be the key of the day and the lock of the night.
Department of
Military Science and Tactics

Professor Colonel C. H. Anderson; Assistant Professors Major J. L. Walker, Artillery; Major L. A. Civille, Infantry; Captain C. E. Wise, Corps of Engineers; Sergeant First Class T. R. Post, Instructor; Sergeant E. J. Dybowsi, Administrative NCO.

Office in Military Science 101

ROTC's purpose is to develop reserve officers in sufficient quantity to provide a nucleus 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, the program produces new second lieutenants for the Active Army and the Army Reserve. A limited number of Distinguished Military graduates are offered commissions in the Regular Army.

To be eligible for a commission as a Reserve Second Lieutenant you must not have reached your 28th birthday prior to appointment. If you are commissioned in the Army Reserve and unless you are a veteran or have completed flight training, you will be required to serve either six months or two years on active duty. If a veteran, you may serve six months or no active duty—or you may request two years active duty if you desire. If you participate in flight training, you must serve three years on active duty.

The Army ROTC offers a four-year program. It consists of two courses: Basic and Advanced. It is elective on your part as to whether or not you enroll in the Basic Course. Once you enter either of the courses, however, you do so for a two-year period. After completion of the two-year Basic course and selection for further training, you may enroll in the Advanced course, subject to any quota limitations. Under the provisions of the contract between the University and
the Department of the Army, the University agrees to require that each student who enrolls in either Basic or Advanced course will complete that course as a pre-requisite to his graduation. Therefore if you enroll in either the Basic or Advanced course, you must complete that course unless relieved of this obligation by regulations prescribed by the Secretary of the Army. Signing of an ROTC draft deferment agreement as a Basic course student obligates you to elect enrollment in the Advanced course, if you are selected for it.

**Army ROTC Flight Training.** This training is offered to selected Senior Army ROTC students who meet class I physical standards for flying. Instruction is so arranged that it will not interfere with ROTC or your regular academic schedules. For acceptance in the course, you 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. The flight program consists of 71 1/2 hours of training: 35 hours of ground and 36 1/2 hours of actual flight instruction. Completion of this training qualifies you for a FAA private pilot's license. All training is conducted by FAA-approved instructors. If you are interested in participating in flight training you should see your Military Science Class Advisor for further information.

**Summer Camp.** Advanced ROTC cadets must participate in a six weeks summer camp held at Fort Lewis, Washington. Attendance is required between your junior and senior years unless a subsequent period is specifically approved by the Professor of Military Science and Tactics. Practical application of classroom theory and living in the field make it an interesting and stimulating experience. You receive pay for the six weeks period and for travel to and from camp.

**Veterans.** Veterans may be given credit for all or part of the Basic course, depending upon length of service. Enrollment in the Advanced program is contingent upon selection as in the case of other cadets.

**High School ROTC.** Students who have completed the three-year high school ROTC program may be given credit for the first year Basic course.

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. The latter who elect 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. Further, it is not possible to qualify for a major in Military Science if you fail to be selected for Advanced ROTC. Although all major fields at this institution are acceptable in a dual major, 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 to Basic ROTC, you should
concentrate on filling lower division group requirements and strive for a high grade point average.

Payment to Advanced Students. Upon enrollment in the Advanced course, you 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.

Delay of Entry on Active Duty. When you have completed the Army ROTC program and are commissioned you may delay entry upon active duty, if you wish to continue studies in certain fields. Information regarding specific fields of study and procedure may be obtained upon request.

Basic Military Science

MS I - First Year Basic

DIRECTOR: Captain C. E. Wise

Courses

11. Military Science I. Organization of the Army and ROTC, Individual Weapons and Marksmanship, Leadership, Drill and Command. Two class periods and one two hour leadership laboratory period per week. (2F) Anderson


MS II - Second Year Basic

DIRECTOR: Captain C. E. Wise

21. Military Science II. Map Reading, Leadership, Drill and Command. Prerequisites: Military Science 11, 12, and 13 or 24. Two class periods and one two hour leadership laboratory period per week. (2F) Wise


23. Military Science II. Continuation of Military Science 22. Crew Served Weapons and Gunnery, Leadership, Drill, and Command. Two class periods and one two hour leadership laboratory period per week. (2S) Wise

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 regularly offered times. (2F, 2W, 2S) Wise

Advanced Military Science

MS III - First Year Advanced

DIRECTOR: Major L. A. Civille

131. Military Science III. Leadership, Military Teaching Methods, Organization, Function, and Mission of the Arms and Services, Leadership, Drill and Command. Four class periods per week and one two hour leadership drill period per week. (3F) Civille

132. Military Science III. Continuation of Military Science 131. Organization, Function, and Mission of the Arms and Services, Small Unit Tactics. Four class periods per week. (3W) Civille

133. Military Science III. Continuation of Military Science 132. Small Unit Tactics, Leadership, Drill and Command. Four class periods and one two hour leadership laboratory period per week. (3S) Civille

150. Military Science Summer Camp. Attendance at summer camp is required of all Advanced Military Science students. Practical training for six weeks at a regular Army post subsequent to completion of Military Science III. (6Su)
143. Military Science IV. Continuation of Military Science 142. Military Administration, Service Orientation, Leadership, Drill and Command. Four class periods and one two hour leadership laboratory period per week. (GS) Walker

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) Anderson

Department of Air Science

PROFESSOR Major L. R. Pugh, Jr.; ASSISTANT PROFESSORS Major D. J. Ringle, Captains J. Fischle, E. E. Johnson.

Office in Military Science 104

The purpose of Air Force ROTC is to prepare young men to serve as officers in the Reserve and Regular components of the Air Force. It is not the purpose of the course to train you in a specific field, but rather to give you an understanding of the mission and the global responsibilities of the United States Air Force. The academic phase of the course develops a background in national and international affairs to help you intelligently interpret and evaluate world events.

Summary of the AFROTC Curriculum. The AFROTC curriculum has been designed to meet the following criteria: college level in content, scope, intensity and presentation; appeal to students in all academic fields; and preparation of students to undertake flying training upon graduation.

Study is divided into the basic course, covering the first two years, and the advanced course, covering the Junior and Senior years plus Summer Training. The course of study consists of instruction totaling 480 hours, allocated as follows: Freshman and Sophomore years, 90 hours each; Junior and Senior years, 150 hours each, and summer training, four weeks.

The basic course, Foundations of Air Power, is an introduction to the nature of Air Power with its political, economic, social and psychological influence on modern man. The advanced course, building upon this background, provides instruction designed to further develop your leadership potential. This is accomplished through attention to the development of skills in human relations (e.g., problem solving,
228 Air Science

group leadership techniques, writing, speaking and teaching techniques); and through increased understanding of the economic, political, social and geographical concepts involved in Air Force operations.

In addition, the curriculum includes: experiences designed to stimulate and develop a growing interest in the Air Force Flight Training Program (e.g., orientation flights and visits to Air Force Bases); opportunities to apply the principles of leadership, management and staff work in practical situations; and other related experiences.

Throughout the Air Force ROTC course of study you are provided a general education complimentary to the academic program of the University and with preparation for living in the Aero-Space Age. While this material is specifically intended to serve you as an Air Force Officer much of it will be useful to you in civilian occupations.

Quotas and Physical Requirements. There is no limitation on the number of young men who can be enrolled in the basic program. For the advanced program, however, a yearly quota is established by the Air Force. This quota is based on estimated Air Force needs for young officers of various skills and the projected officer production of the local AFROTC Detachment.

All cadets must meet the physical standards for general military service. Your physical examination for entry into the University will generally determine whether or not you meet these requirements.

Veterans. If a veteran you are accepted into the AFROTC program without regard to quota spaces. If you can complete the program prior to reaching age 28 and can meet the physical requirements for general service, you may be commissioned a Second Lieutenant in the Air Force Reserve and compete for a career as a regular Air Force Officer. You are not required to serve on active duty but may volunteer to do so. Parts of the basic program may be waived in lieu of prior military service. You may also compete for pilot and navigator spaces, and if accepted you must complete the Flight Instruction program (Pilots) in your Senior year and the active duty requirements.

Special University and AFROTC Requirements. Once you enter the basic or advanced program, successful completion of that program becomes a requirement for graduation, unless you are relieved of the requirement by the Professor of Air Science or the President of the University. In addition, when you enter the Advanced Course, you must agree to accept an Air Force Commission, if it is offered to you, and to serve on active duty if directed to do so.

Upon your initial enrollment at the University, you should schedule Air Science classes to complete simultaneously your requirements for a degree and a commission. If an engineer under a five-year program you should plan your Air Science program in advance with your adviser and the AFROTC Director of Training in order to meet the above requirements.

Because of the differences in the Army and Air Force ROTC Programs, no credit is given for High School ROTC, although high school ROTC experiences are beneficial in the Air Science program. If you wish to qualify as a pilot or navigator, you must be able to
finish the Air Science program and graduate from the University before you reach the age of 26 years. Other cadets must complete the military program and graduate from the University prior to reaching the age of 28.

**Regular Commissions in the United States Air Force.** Outstanding AFROTC Cadets, who have demonstrated a high degree of leadership, initiative and an interest in a career as a regular Air Force Officer and are designated a Distinguished Military Graduate may be offered an opportunity to apply for a regular Air Force Commission.

**Payments to Advanced Cadets.** As an advanced cadet, you are paid a subsistence allowance of approximately $27 per month. The maximum amount paid for your Junior and Senior years is approximately $600. While at Summer Training you will receive approximately $81.00 plus travel pay for the round trip to and from camp.

**Summer Training.** One summer training camp of 28 days duration is required of all cadets in the advanced course. Normally, you will attend this camp between your Junior and Senior years at a selected Air Force Base. Cadets living in Utah and Idaho generally attend camp in California or Washington. Six quarter hours of college credit are granted for summer training.

**Flight Training.** AFROTC is concerned with two types of flight training. The first type is taken while you are a cadet at the University and the other after you have received your commission and have graduated.

Cadets designated potential pilots are required to register for the AFROTC Flight Instruction Program (FIP) during their senior year. Successful completion of 36½ hours of flight instruction and a CAA examination enables you to acquire a private pilot's license and to gain three hours of University credit. The entire cost of this training is paid for by the Air Force.

Cadets designated to become pilots and navigators are required to take flight training after reporting for active duty. During your year of flight training in the U. S. Air Force as a Second Lieutenant, you will receive full pay and allowances, plus flight pay, a total of approximately $5,600.00.

**Non-Flying Cadets.** In order to meet the challenge of the Aerospace Age, its Technological advances and its ever broadening horizons, officers possessing a variety of skills are required within the Air Force. These skills cover the exact sciences and social sciences but are not limited to these areas of study. In many of these fields you may be granted a year delay to acquire an advanced degree prior to your call to active duty. After your call to active duty you will serve three years in your major field of study. Interested cadets may contact the AFROTC Education and Training Officer for information on Air Force specialist fields related to their academic major.

**Delay of Entry on Active Duty.** If you complete the AFROTC program and received your commission, you may request a delay in call to active duty if you desire to continue your 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 26½ years of age.

Texts and Uniforms. All texts and uniforms are furnished at no expense to you.

Air Force Chaplains. If you meet special requirements, you may be commissioned as a chaplain in the Air Force. Selection rests with the Chief of Chaplains, United States Air Force, Washington, D. C. Interested individuals are urged to contact members of the AFROTC staff for further information.

Air Force Library. A library of Air Force periodicals and publications is maintained for the Air Force ROTC Cadet. Material relative to your Air Force ROTC curriculum is available to you.

Air Force ROTC Counseling Service. Air Force ROTC Detachment maintains counseling service for each cadet. Service is offered primarily in areas concerned with the AFROTC curriculum (Education, Study and Leadership).

Air Science Courses

Two hours of drill are required each week during the fall and spring quarters.

Air Science I - First Year Basic

11. Air Science: Foundation of Air Power (1A). A general survey of Air Power designed to provide the student with an understanding of the elements and potentials of air power and basic aeronautical science. It includes the fundamental nature of aviation and its impact on the modern world. The special characteristics of modern aviation, including its magnitude, capabilities and complexity, are followed by a discussion of the Air Force ROTC students' place in aviation from both a military and civilian point of view. In addition this course covers research and development trends, air vehicle industries, civilian and military airlines and global airways. (2F)

12. Air Science: Foundations of Air Power (2b). A general survey of aeronautical science to include nomenclature, elements and characteristics of aircraft, the basic principles of flight and operations of conventional aircraft and space vehicles, guidance, control, navigation and propulsion systems. Students may participate in orientation flights and visits to Air Force Bases in order to gain further insight into these aspects of air power. (2W)

13. Air Science: Foundations of Air Power (1c). A general survey of the factors involved in space flight, the historical development of United States military policy, the role of the Defense Department, including the Air Force, Army and Navy, in the maintenance of national security and become acquainted with the variety of professional skills and opportunities which exist in the USAF, and acquire a general knowledge of the tangible and intangible benefits accruing to an Air Force Officer. (2S)

14. Sabre Squadron. Sabre Squadron (Freshman) AS 14a, (IF); AS 14b, (1W); AS 14c, (1S). Sabre Squadron (Sophomore) AS 24a, (1F); AS 24b, (1W); AS 24c, (1S). Sabre Squadron (Junior) AS 136a, (1F); AS 136b, (1W); AS 136c. Sabre Squadron (Senior) AS 146a, (1F); AS 146b, (1W); AS 146c, (1S). The Sabre Squadron is a national honorary society for Basic AFROTC Cadets. Its purpose is to foster esprit-de-corps among Freshman and Sophomore Cadets; to offer service to Utah State University; to promote American citizenship; to provide leadership experiences; to promote Air Power concepts; to increase cadet knowledge of the mission and scope of the United States Air Force. Sabre drill is required.

Air Science II - Second Year Basic

21. Air Science: Foundation of Air Power (2a). A survey of the development of aerial warfare with emphasis on the principles of war and on their application and critical influence in waging war, basic concepts regarding the employment of air forces in peace and war, and the changes in weapons systems to meet the demands of the space age. (2F)

22. Air Science: Foundations of Air Power (2b). Aerial warfare is treated to include the historical concept of weapons, the characteristics of conventional weapons used by the USAF in the recent past and today, the characteristics of chemical, biological and thermonuclear weapons and philosophy regarding their use, the history and use of guided missiles and their place in the space age. (2W)
Air Science 231

23. Air Science: Foundations of Air Power (2E). Aerial warfare is continued to include the relation of air bases to the Air Force mission, air base facilities, personnel procurement and mobilization, organization of the Air Defense system (including aircraft control and warning) air ground and airborne operations, increased understanding of the characteristic requirements, moral obligations, ethical concepts of life which determine the development of the highest type of leadership. This study concludes with the probable future of Air Power. (2S) Staff


Air Science III - First Year Advanced AFROTC Course

131. Air Science. Air Force Officer Development (1A). Taught in three phases: Communicating in the Air Force, the Air Force Commander and His Staff, and Instructing in the Air Force. Communicating in the Air Force is a study of learning techniques, barriers to effective learning, and speaking and writing skills. Instructing in the Air Force is a study of principles of learning, personal and professional qualities of instructors, methods of instructing, instruction planning, and the use of visual aids. Practical experience in instruction is offered. The Air Force Commander and his Staff is a study of the functions and responsibilities of Air Force Commanders, delegation of authority to staff officers, and organization of military units. (3F) Staff

132. Air Science: Air Force Officer Development. Consists of two phases: creative problem solving and the military justice system. The first twenty-five hours are devoted to aspects of creative problem solving, thought processes, logic, imagination, creative thinking, scientific research method and the individual and group brainstorming. Practical application of techniques is provided through realistic problems of Air Force nature. The Military Justice System, 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. (5W) Staff

133. Air Science: Air Force Officer Development. 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 the Air Force leadership and management problems. 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 individuals leadership potentials both as an Air Force Officer and a civilian leader. (3S) Staff

150. Air Science: Air Force ROTC Summer Training Unit. Consists of four weeks (144 contact hours) of practical training at an Air Force Base and 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 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 you to ride in jet aircraft. A minimum of two flights is permitted to each cadet, one thirty minute jet ride, and one ride in another type aircraft as a crew member. You participate in pre-flight and post flight briefings, and receive emergency equipment indoctrination. Demonstration and field trips are provided to airfield installations and fire power demonstrations. Practical leadership training is provided through group exaltationics, individual and group sports, familiarization firing of pistol and carbine and directing cadet operations. 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 of extreme hardship. If an exemption is granted, you must attend summer training at the end of your senior year and you will be commissioned upon successfully completing the summer training if your university degree requirements have been met. (6Su) Staff

Air Science IV - Second Year Advanced AFROTC Course

141. Air Science: Weather and Navigation. A study of the weather and navigational aspects of airmanship, such as temperature, pressure, air masses, precipitation, weather charts, navigational charts and dead reckoning navigation. (3F) Staff

142. Air Science: Military Aspects of World Political Geography. Concerned with the impact of air power on global relations. Air Power is studied in relationship to international politics (state systems, political power, contemporary ideologies, propaganda,
regionallism, and defensive alliances). Air power is also related to factors which influences the power of states and strategic areas. The implications of atomic power and problems of armament control in the atomic age and in relation to Air Power. (3W)

143. Air Science: International Relations and the Air Force Officer. This course is devoted to study of major factors underlying international tensions—nationalism, imperialism, and communism, the attempts to alleviate these tensions—balance of power concepts, the League of Nations, the United Nations and the regional security organizations, and the rise of the two super powers—the United States and the USSR. One quarter hour is devoted to the study of material to help the cadet make a rapid effective adjustment to active duty as an officer in the United States Air Force (3S) Staff

143a. Air Science: Active Duty as an Officer. This course is designed to help the student make a rapid and effective transition to active duty as an officer in the U. S. Air Force. Emphasis is placed upon a further development and application of leadership skills, responsibilities and obligations of the Armed Forces Officer, personal and professional considerations of military service. One hour of lecture and two hours of leadership laboratory per week are required. (18) Staff (This course taken with Pol. Sci. 111 (International Organization) is the desired substitute for AS 143).

145. Flight Instruction Program. This course covers instructions in ground school, CAA Regulations, Radio and Airways procedures, navigation, general service and operation of aircraft. Flight instruction includes 36½ hours on light aircraft and includes: pre-flight checks, solos, cross country flights and a CAA flight examination. Subject open only to qualified senior AFROTC Cadets. Instruction arranged to not interfere with regular academic schedule. Prerequisite: 141. Navigation and Weather. (3W, S) Staff

146. Sabre Squadron. See Number 14. Sabre Squadron. (1F, W, S)

We see the failings of others but are often blind to our own.
School of Graduate Studies

J. Stewart Williams, Dean
School of

Graduate Studies

General Graduate Policies, 235

Graduate Degrees, 237

Degree of Civil Engineering, 239
Degree of Irrigation Engineering, 239
Master of Business Administration Degree, 238
Master of Education Degree, 238
Master of Forestry Degree, 238
Master of Industrial Education Degree, 239
Master of Science Degree, 237
Doctor of Education Degree, 239
Doctor of Philosophy Degree, 240

Curriculum in Nutrition and Biochemistry, 241

Teaching and Research Assistantships, 242

Fellowships, 242

Tuition Scholarships, 243
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, James A. Bennett; College of Business and Social Sciences, Vernon L. Isaelsen; College of Education, Arden Frandsen; College of Engineering, Cleve H. Milligan; College of Forest, Range and Wildlife Management, Laurence A. Stoddart; College of Family Life, 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.

General Policies on Graduate Work

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 advanced 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.

Thesis or Dissertation. As a candidate for an advanced degree you usually must present a thesis or dissertation on a topic within the field of your major subject, which must represent from nine to fifteen hours of the credit presented for your masters degree, and as much as forty-five hours of credit for the doctors 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 two advanced reports, valued at six to ten credits, for the regular Master's 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.

Credit Load. Maximum load for full-time graduate students is sixteen credits. Maximum for assistants engaged in teaching or research is twelve credits.

Graduate credit. If you are properly registered in the School of Graduate Studies any course in the 100 series is recorded as graduate credit. If you are in education and interested in re-certification you should be sure you are registered in the School of Graduate Studies.
Minimum requirement for such registration is the possession of a bachelor's degree from an accredited institution.

Degree of

Master of Science

The Master of Science degree 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.

Requirements. Your program for the Master's degree must include:
(1) At least thirty credits taken on the Logan campus; thesis credit counts toward this residence requirement; (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 (in Education at least 25 credits must be in courses numbered 200 or above); (4) A thesis with nine to fifteen credits, or thesis alternate.

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 by determined by your committee.

Degree of

Master of Education

The Master of Education Degree is offered in each of the following areas: Educational Administration, 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, except that a minimum of 25 credits must be taken on the Logan campus; (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) Evidence of potential success as a teacher or successful teaching experience.

Degree of

Master of Forestry

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.

Degree of

Master of Business Administration

The Master of Business Administration degree is given upon completion of a course of study prescribed by the Department of Business Administration within the general requirements of the School of Graduate Studies. It is designed to serve the needs of graduates from recognized colleges of business as well as graduates in liberal arts, science, engineering or other fields with a professional interest in management. The entire program, aimed at developing broad executive skills, can be covered in a period of two years. Those with strong backgrounds in business administration and economics, however, should be able to complete the program in a significantly shorter time.

The evil magic of marriage is the sudden transformation from alluring girl to slovenly wife.
Degree of

Master of Industrial Education Degree

The Master of Industrial Education Degree provides advanced preparation for those engaged in teaching, supervising, or administering Industrial Education programs. This program is sufficiently flexible to meet the needs of individuals engaged in the various phases of the work. It is planned to provide the cultural and professional development considered essential to educational leadership in this field. The requirements are essentially the same as for the Master of Science degree except that additional professional course work is taken in lieu of the traditional Master's Thesis requirement. The candidate must complete a scholarly piece of work designated as a Seminar Report. This report should demonstrate the student's competence in professional writing. The degree is awarded only when the candidate's over-all record, including course work, the Master's examinations and the Seminar Report, represent creditable accomplishment. Candidates for this degree must have had three years of successful teaching experience.

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 includes: (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.

Degree of

Doctor of Education

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.

**Degree of Doctor of Philosophy**

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, Nutrition and Biochemistry, 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 of 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 independent research. It must present a contribution to knowledge in scholarly fashion.

**Final Examination.** The final examination 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.

Facilities of the several departments conducting nutrition and biochemical research have been made available in this curriculum to afford students maximum opportunity to gain experience and training. Included in the facilities are an animal metabolism building and equipment for conducting digestion and metabolism studies on large and small animals and several laboratories equipped with such equipment as an electron microscope, spectrograph, ultracentrifuge, electrophoresis apparatus, gas chromatographic equipment, as well as standard laboratory equipment.

Major problems currently being studied are effects of toxic and non-toxic substances on digestion and metabolism of farm animals, atmospheric pollution, cholesterol metabolism, amino acid metabolism, and other basic physiological processes related to nutrition.

Training in the curriculum is designed as preparation for research in educational institutions, governmental and industrial laboratories, and for college teaching.

Prerequisites for a major in the curriculum should include at least one year or equivalent training in English composition, chemistry (including qualitative analysis, analytical, organic, and biochemistry) mathematics through trigonometry, physics, bacteriology, botany, physiology, and zoology. Any deficient prerequisite work must be completed without graduate credit.

A student shall spend at least two-thirds of his time for the doctorate degree, including thesis, on the major subject. The minor must be in an area of work which can be logically related to that of the department in which the student is doing his major work.

Appropriate minors are mathematics, statistics, chemistry, physics, physiology, genetics and other fields closely related to the major.

For more specific details concerning admission, requirements, and available scholarships and fellowships write the curriculum chairman.
### Master's Degree Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Advanced Nutrition</td>
<td>10</td>
</tr>
<tr>
<td>2. Advanced Biochemistry</td>
<td>10</td>
</tr>
<tr>
<td>3. Statistics</td>
<td>8</td>
</tr>
<tr>
<td>4. Physical Chemistry (Biol.)</td>
<td>3</td>
</tr>
<tr>
<td>5. Electives and Research</td>
<td>14-17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>45-48</strong></td>
</tr>
</tbody>
</table>

### Doctorate Degree Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Advanced Nutrition</td>
<td>12</td>
</tr>
<tr>
<td>2. Advanced Biochemistry</td>
<td>15</td>
</tr>
<tr>
<td>3. Statistics</td>
<td>12</td>
</tr>
<tr>
<td>4. Physical Chemistry (Biol.)</td>
<td>3</td>
</tr>
<tr>
<td>5. Physiology, Zoology, Pathology</td>
<td>20</td>
</tr>
<tr>
<td>6. Elective and Research</td>
<td>73</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>135</strong></td>
</tr>
</tbody>
</table>


### 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 $1600 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.


### Fellowships

**Nine University Research fellowships** carry a stipend of $2,000 and the remission of non-resident tuition. The student is required to successfully participate in a research project leading to a Master's thesis or Doctor's dissertation. These are tenable in any field in which USU grants an advanced degree. Application must be made by March 15, and awards are made April 15.

**National Defense Graduate fellowships** for the Doctor's degree are available in five fields: Civil Engineering, Irrigation Engineering, Entomology, Physiology, Zoology. They carry stipends of $2,000 for the first year, $2,200 for the second year, and $2,400 for the third year, plus an allowance of $400 per year for each dependent. Non-resident tuition is waived.

**Cooperative Fellowships.** USU participates in a Cooperative Fel-
lowships program with the National Science Foundation. These fellowships carry a stipend of $1,650 for a tenure of nine months, and $2,200 for a tenure of 12 months, plus a remission of fees. Deadline for application is November 1, and awards are made March 15.

**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.)

*In the dictionary of youth there must be no such word as failure.*
We must crawl before we can walk.
Summer School
L. G. Noble, Director
Office in Main 130

Summer School runs from June 13 to August 19, 1960. The first session is from June 13 to July 15; second session begins July 18 and ends August 19.

General Information. USU is situated on a hill overlooking beautiful Cache Valley. One mile to the east is the entrance to scenic Logan Canyon through which Highway 89 leads to Bear Lake and on northeast to Star Valley, Jackson's Hole and Yellowstone Park.

With its population of 18,000, Logan is an ideal place to combine study and vacation. The summer climate is unsurpassed. The evening canyon breeze makes summer nights comfortable and invigorating.

USU National Summer School is many things. It is organized to meet the diverse needs of administrators, supervisors, elementary and secondary teachers, guidance counselors, entering freshmen, people in the professions and vocations. In short, the major objective of the University is to foster all that makes right living, good citizenship, vocational efficiency, general culture and the improvement of our democratic way of life. Such values may be realized by participating in planned activities scheduled for one week, two weeks, one session or a full ten-week period.

June 13-August 19, 1960
First Session June 13-July 15
Second Session July 18-August 19

The instructional services at the University are organized into seven colleges: Agriculture, Business and Social Sciences, Education, Engineering, Forest, Range and Wildlife Management, Family Life, University College; also the School of Graduate Studies. Through all of these colleges, it is the policy of the University to make available to students opportunities for a broad program of collegiate instruction including vocational, technical, scientific and liberal education.

You can effectively combine education and recreation on one of the most beautiful campuses in America, at a moderate cost. USU has a Summer School with a national reputation. It has a highly competent resident staff, plus visiting teachers and lecturers of national recognition. Its exceptional recreational and cultural opportunities include fishing, boating, hiking, canyon parties and family picnics in Logan Canyon, within three minutes of the campus. Weekend trips are scheduled to such beautiful spots as Bear Lake, Yellowstone Park, Grand Teton National Park, and the Bear River Bird Refuge.

A 1960 Summer School catalog will be mailed to you upon request.

Not failure but low aim is a shame.
Division of Off-Campus Education
Division of

Off-Campus Education

Off-Campus Classes, 249

Travel Study-Tours, 249

Adult Education Services, 250
  Faculty Speaker Service, 250
  University Lecture Series, 250
  Conferences and Institutes, 250

Home Study (Correspondence), 250
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 educational 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 Classes

Organized courses in many departments of Utah State are offered in as many as thirty selected residence centers of the state for groups of people who cannot come to the home campus at Logan, but who desire professional improvement or who are interested in an advanced degree. 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 prerequisites as comparable classes on the University 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, Division of Off-Campus Education, USU, Logan.

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, USU, well in advance of the close of the academic school year 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.

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 public education. Copies of the Faculty Speaker Service Brochure may be had by writing to the Director of the Division of Off-Campus Education, USU, 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 Catalog section on University Program Bureau.)

Home Study Courses

Many individuals desire organized, systematic instruction, but live in isolated areas or for other reasons cannot 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 general education and professional improvement in selected fields.

An enrollee 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 to be 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.

An enrollee is allowed one year in which to complete a course. An extension of time may be granted upon payment of a small fee.

U.S.A.F.I. Courses. The Home Study Division of the University 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 in
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, USU, Logan.

Veterans. USU 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 $6 per credit hour is charged for Home Study courses of college level. High School course fees are $18 per unit and $12 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

Courses offered by the Division of Off-Campus Education include the following, descriptions of which are given in this catalog under the departments concerned:


252 Off-Campus Education


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.


Secretarial Science: 75. Elementary shorthand; 41. First Quarter Typewriting; 42. Business Typewriting; 43. Advanced Typewriting; 130. Business Communications; 175. Office Management.


Physiology: 4. Human Physiology.

HIGH SCHOOL COURSES


Geography: 63. Geography.

History: 64. United States History; 65. World History.


Avoid great faults by keeping away from small ones.
Royden C. Braithwaite, Director
College of Southern Utah, Cedar City

Floyd S. Holm, Director
Snow College, Ephraim
Branch Colleges

College of Southern Utah, Cedar City
Division of Agriculture, Biology, Forest, Range and Wildlife Management
Division of Air Science
Division of Business and Social Science
Division of Education
Division of Engineering and Physical Science
Division of Family Life
Division of Industrial and Vocational Education
Division of Humanities, English and Fine Arts

Snow College, Ephraim
Division of Agriculture and Life Sciences
Division of Business
Division of Education and Social Science
Division of Humanities
Division of Industrial and Vocational Education
Division of Physical Science and Mathematics
Branch Colleges

In addition to seven resident colleges, a school of graduate studies and several other divisions located on the Logan Campus, Utah State University includes two branch colleges—Snow College at Ephraim and the College of Southern Utah at Cedar City.

College of Southern Utah

Daryl Chase, President
Royden C. Braithwaite

The College of Southern Utah was founded in 1897 as Branch Normal School of the University of Utah and functioned as such until 1913 when it became a branch of Utah State University. For the next 40 years it was known as Branch Agricultural College. In 1953 the name was changed to College of Southern Utah.

Its affairs are under the immediate supervision of the Board of Trustees of Utah State University and administered by the President through a director who is responsible directly to the President of Utah State University.

Location. The College of Southern Utah is located at Cedar City in Southwestern Utah.

Accreditation. College of Southern Utah is accredited by the Northwest Association of Secondary and Higher Schools.

Campus and Facilities. The main campus of CSU consists of 60 acres of land and 21 buildings. In addition to its main campus the college includes 3,000 acres of mountain range land, a 1,000-acre valley farm, and numerous livestock sheds and buildings.

Degrees and Certificates. CSU is authorized to issue the certificate of Associate in Science, and by action of the Board of Trustees offers four years of work leading to the degree of Bachelor of Science in elementary education. This degree is awarded through Utah State University. Students who follow terminal curricula are awarded a two-year certificate of completion.

Curricula. CSU is authorized to teach lower division courses in all basic areas of instruction, and by action of the Board of Trustees, four years of work in elementary education.

Courses offered at College of Southern Utah parallel lower division courses offered at Utah State University. Course numbers generally coincide with those listed at USU. You may complete all lower division requirements at College of Southern Utah and transfer to Utah State University for completion of upper division work. Course instruction is offered in divisions and departments which correlate with lower division work in the academic colleges on the Logan Campus.
Snow College

Daryl Chase, President
Floyd S. Holm, Director

Snow College was founded in 1888. It was originally known as Sanpete Stake Academy and was operated by the Church of Jesus Christ of Latter-day Saints. The institution became known as Snow Normal College in 1912 and as Snow Junior College in 1922. It was operated as a State Junior College from 1932 until July 1, 1951, when it became a branch of Utah State University.

Its affairs are under the immediate supervision of the Board of Trustees of Utah State University and administered by the President through a director who is responsible directly to the President of Utah State University.

Location. Snow College is located at Ephraim, which is the geographic center of the state of Utah.

Accreditation. Snow College is accredited by the Northwest Association of Secondary and Higher Schools.

Campus and Facilities. The main campus of Snow College consists of 30 acres and contains 12 buildings. In addition to the main campus, Snow College operates a 96-acre college farm.

Degrees and Certificates. Snow College is authorized to confer the certificates of Associate in Science and Associate in Arts upon completion of a two-year college program. Students who follow terminal curricula are awarded a two-year certificate of completion.

Curricula. Snow College is authorized to teach lower division courses in all basic areas of instruction.

Courses offered at Snow College parallel lower division courses offered at Utah State University. Course numbers generally coincide with those listed at Utah State University. You may complete all lower division requirements at Snow College and transfer to Utah State University for completion of upper division work. Course instruction is offered in divisions and departments which correlate with lower division work in the academic colleges on the Logan Campus.

For Information. A special catalog for Snow College is issued each year. It contains a detailed announcement of all curricula, statement of courses, entrance requirements, rules and regulations for the college. For a copy of the Snow College catalog, or for information concerning the work of Snow College, address:

Director's Office,
Snow College,
Ephraim, Utah.
Student Services and Activities

J. Elliot Cameron, Dean
Student Services and Activities

Student Services, 259

Religion, 259
Housing, 259
Food Services, 262
Awards and Honors, 262
Scholarships and Grants-in-aid, 267
Loans, 268
Employment, 269
Counseling, 270
Health, 271
Orientation, 272
Foreign Student Advisement, 272
Speech Clinic, 272
Helpful Courses, 273

Student Activities, 273

Intercollegiate Athletics, 273
Intramurals, 274
Musicals, 274
Theatricals, 274
Opera, 274
Debating and Public Speaking, 274
Publications, 274
Radio Station KVSC, 274
Lyceums, 274
Dances and Entertainments, 274
Assemblies, 274
Committees, 274
Student Government, 274
Student Organizations, 275
Student Services and Activities

DEAN, J. E. Cameron; DEAN OF WOMEN, L. Dunford; ACTING REGISTRAR, A. L. Beecher; ADMISSIONS COUNSELOR, T. B. Waddoups; COORDINATOR OF STUDENT ACTIVITIES, E. Stevenson; COORDINATOR OF STUDENT HOUSING, W. W. Skidmore; COORDINATOR, COUNSELING AND TESTING, E. W. Wright; CHAIRMAN, STUDENT HEALTH SERVICES, G. W. Neece; CHAIRMAN, STUDENT EMPLOYMENT PLACEMENT, R. Willyerd; CHAIRMAN, SHORT-TERM STUDENT LOANS, W. Tezak; CHAIRMAN, NATIONAL DEFENSE EDUCATION LOANS, W. E. Watkins; CHAIRMAN, SCHOLARSHIPS, AWARDS, AND HONORS, J. E. Cameron.

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 Dean. 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

Separation of Church and State does not dictate a separation of Religion and Education. To be complete, education must include religious education.

LDS, Protestant, and Catholic churches offer courses in religion for USU students. You can receive credit at USU for all University accredited non-sectarian courses successfully completed at any of these churches. Any such courses taken are considered a part of your maximum academic load at USU.

In addition to formal course work, these churches provide religious services, personal counseling, and a program of social activities especially designed for students.

USU is interested in the spiritual and moral growth of all students. You are encouraged to affiliate with the church of your choice.

Housing

Residents must be regularly enrolled students at Utah State University. (Costs subject to revision)
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 Supervisor of Women's Housing 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 three bedrooms. Living-room-kitchen is equipped with electric refrigerator, electric range, table, chairs, and draperies. Cooking utensils, dishes, towels, linens, bedspreads, irons, ironing boards for use in apartments, and all other personal effects are to be furnished by the renters. Cost of electricity used 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. The University provides coin metered washing machines. Ample storage space is provided.

One Conventional Board and Room Residence Hall will accommodate 100 women, two to a room. Linen changes, bedding, study desks, lamps, and utilities are furnished. The University provides coin metered washing machines. Towels and other personal effects are not furnished. Cost of $210.00 per quarter covers board and room charges. Twenty meals per week are provided in the Student Union Cafeteria. Cost of room without board is $85.00 per quarter.

Cooperative Houses on campus provide for excellent group living experience for 22 upper-class students who share living expenses and housework. 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, six to an apartment. Accommodations consist of combination living-room-kitchen, bath, and three bedrooms. Living-room-kitchen is equipped with electric refrigerator, electric range, table, chairs, and draperies. Cooking utensils, dishes, towels, linens, bedspreads, irons, ironing boards for use in apartments, and all other personal effects are to be furnished by the renters. Cost of electricity used 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 rooms, laundry rooms are shared. The University provides coin metered washing machines. Ample storage is provided.

One New Conventional Board and Room Residence Hall will accommodate 360 men. A dwelling unit provides for eight men, two to a bedroom. Twenty meals per week are provided in the Student Union.
Cafeteria. Linen changes, bedding, study desks, lamps, and utilities are furnished. Towels and other personal effects are not furnished. A cost of $210.00 per person per quarter covers board and room charges. Cost of room without board is $85.00 per quarter.

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 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 40 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 bathing 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. Most board and room situations consist of 12 to 14 meals per week. The noon meal is rarely provided by the landlord. A noon meal can be had in the Student Union Cafeteria on campus for about 65¢. This arrangement costs an off-campus student about $75.00 per month. Sleeping rooms range from $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 Co-ordinator of Student Housing, Utah State University, Logan, Utah. A $25 application fee is required when applying for University-owned housing. Priority lists are based on date of application. Students desiring off-campus housing may procure the current housing list upon arrival at the University, Room 133, Main Building.

Housing Regulations, Procedures

Students living in private housing are obligated to retain their accommodations for at least one quarter. Rents are payable in advance. A two-week 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 10¢ per day thereafter is imposed. The $25 fee is forfeited if (a) notice of withdrawal from University housing is made after August 1, or (b) a student moves from the assigned hall prior to the end of the period covered by the agreement.

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., 50-65¢; Lunch, 11:30 a.m.-1:00 p.m., 65-85¢; Dinner, 5:30 p.m.-6:30 p.m., 75¢-$1.00. 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. Open Sunday evenings, 5 to 7 p.m.

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.

Industrial Arts Club Scholarship. The Industrial Arts Club of USU awards a scholarship of $50 to an outstanding sophomore or junior student majoring in Industrial Arts. The recipient is designated in fall quarter of each year. Applications are made to the Industrial Arts Club and are judged on scholarship, need, school and club activities.

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 combinations 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.

Louise Y. Robison 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. 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.

Awards and Scholarships 263

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.

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 Family Life 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 LDS 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 theRalston Purina Company to an outstanding junior in the College of Family Life. 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 engineering 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 Marjorie 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 practicality. 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 USU student writing the best acceptable treatise on any phase or field of Cache Valley history. Papers must be sub-

mittted on or before the end of the spring quarter and become the property of the Cache Valley Historical Society.

The Barnes Key. Rey and Marjorie Barnes award a key annually to an undergraduate student who is affiliated with the campus radio or television station. The student must have a cumulative grade point average of 2.5 or above, must have carried at least one radio class during the year of the award, and must have demonstrated a deep interest in furthering radio and television arts at Utah State University. Selection shall be made by the Director of Radio and Television at USU, the person directly responsible for the campus radio station, and Rey L. Barnes.

Colonel Joe E. Whitesides 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 (ROTC) 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.

College of Family Life Scholarship Awards. These are joint awards offered by the residence staff in the College of Family Life and the extension staff members in Home Economics. Minimum awards of $100 are given to a junior and senior student in the College of Family Life who plans to receive a degree from the College. The awards are based on scholarship, citizenship, need, and participation in activities 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 Family Life who show outstanding aptitude in the field.

Sears Roebuck Foundation Award in Home Economics. An award of $200 given to a

Awards and Scholarships 265
266 Student Services

freshman student in the College of Family Life who has a high scholastic standing, leadership ability, and promise of achievement.

4-H Scholarship offered by Alpha Gamma Rho. 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. 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 the 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 ROTC 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.

Merck Award. Merck and Company, manufacturing chemists, award annually a copy of the Merck Index to an outstanding student in organic chemistry and biochemistry chemistry.

Chemical Rubber Publishing Company Freshman Chemistry Award. The Chemical Rubber Publishing Company annually awards, to an outstanding freshman in General Chemistry, a copy of its Handbook of Chemistry and Physics.

Chemistry Faculty Award. The staff of the Chemistry Department annually awarde a copy of the Handbook of Chemistry and Physics to the outstanding freshman student completing Chemistry 10 and 11.

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 Scholarship 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. (Valedictorians excluded.)

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 considerations: (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. (University award winner excluded.)

O. Guy Cardon and M. N. Neuberger Scholarship in Social Science. The Bluebird Candy Company at Logan offers a scholarship in the social sciences: economics, history, political science, and sociology, in honor of the late O. Guy Cardon and of M. N. Neuberger. Mr. Cardon and Mr. Neuberger established their business forty-five years ago. Their success is in large degree attributed to their ability in human relations both between each other and with their thousands of customers. The present management wishes to recognize this aspect of business and personal life. Applicants majoring in the fields indicated should contact the Dean of Business and Social Sciences.

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 in 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 suffi-
cient reasons if, in the judgment of the Dean 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 impetuous 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 Family Life 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.

Woody B. Searle Scholarship. A tuition scholarship is awarded each year by Woody B. Searle to a needy and deserving graduate of the Uintah High School. Applications should be filed before April 15th with the principal of the U.H.S. at Vernal.

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, also 16 to FFA members. These members scholarships are $200 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 five scholarships to 4-H Club members in Utah as follows: $350, 1st; $300, 2nd; $250, 3rd; $250, 4th; and $200, 5th; also five scholarships to FFA members.

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 USU.

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 Foundation Scholarship. Thirteen scholarships of $300 each are awarded annually by the Sears Roebuck Foundation to freshmen in the College of Agriculture. Selection is made from graduating seniors of the high schools of Utah on the basis of interest in agriculture, scholarship, leadership, and financial need. The winner who has the best scholastic record at the end of his freshman year receives an additional scholarship for use in his sophomore year.

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 awarded to 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.

Intercollegiate Knights Scholarship. Two $100 scholarships are awarded to two freshman single male students of high scholarship and outstanding leadership ability who are not residents of the state of Utah.

Loans

Long Term Loans: Utah State University participates in the National Defense Student Loan Program. Loans are made available to full-time, needy students who are progressing satisfactorily toward a degree. Ordinarily, a grade-point average of 2.5 is required for former students; or the student should
be in the upper half of his graduating class for high school graduates. Application forms for these long-term, low-interest loans may be obtained in Room 102 of the Main Building.

Short Term Loans. It is the desire of USU that no student fail to complete school because of some temporary financial limitation. As a phase of the program of financial aid to students, small, short-term 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, or a period of time exceeding the academic school year except for graduating seniors.

Individual financial problems may be discussed with the Chairman of Short Term Loans, Main Building, Room 372.

The total Student Loan Fund is composed of the following individual loan funds generously contributed by friends of USU:

USU Faculty Women's League. A loan fund for women students. Loans may range from $50 to $150. Preference is given seniors.

USU 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 Paulsen Loan Fund. A fund provided by the father of a former Aggie student active in student body affairs.

Ichel Water 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.

Employment Placement

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 on and off campus.

All students and students' wives desiring campus employment must register with this office and be appropriately cleared before being hired. An undergraduate student within the colleges of the University may not earn more than $100 per month in University employment. Students employed on assistantships are not eligible for work on an hourly basis without the approval of the President.

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 may receive employment. Such permits may be acquired from the Foreign Student Advisor, Main 124, or the Immigration and Natu-
Student Services

.Globalization 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.

Placement. The Employment Placement Office assists all seniors and post-graduates to obtain employment. Private employers, as well as governmental agencies, coordinate their recruiting programs through the Employment Placement Office.

The University is a member of the National Placement Association which lists many placement opportunities for the graduating student.

Further information is available in the Office of Student Employment Placement, Room 22, Student Union Building.

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 will be referred by faculty advisers, teachers, and residence counselors to the office of the Coordinator of Counseling Services. You are also encouraged to request these counseling services directly through the counseling office whenever you have problems with which you would like help. Professional counseling is available, on a limited basis, in such problem areas as speech, study skills, religion, personal and social adjustments, emotional conflicts, courtship, and marriage.

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 Counseling Service and is available to you. Counselors help students use this information to investigate and appraise occupations in which they might have an interest.

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

A health service is provided for all registered students on the campus at the Student Health Center located in the Union Building.

(1) A health examination is required of all new students and of all who participate in athletic and physical education activities.

(2) The examination should be performed by a private physician of the student's choice and should be accomplished prior to arrival on campus.

(3) New students are encouraged to have their family doctor perform the examination and report on a form provided by the Health Service.

(4) Health examinations for the athletic and physical education programs can be accomplished in the Student Health Center as required.

(5) It is highly recommended that students purchase the Voluntary Student Accident and Sickness Insurance available to them.

A general type of medical care is provided within the limitation of existing facilities under supervision of the university physician.

(1) The following services are available to eligible students without extra cost:

(A) Consultation on health matters.

(B) Medical examinations, as required for participation in sports, physical education, or other activities.

(C) Office care for minor emergencies.

(D) Initial care and first aid treatment for serious emergencies.

(E) Medical advice as to the need of further consultations and specialized treatment in the more difficult problems beyond the scope of the Health Service.

(F) Inoculations and immunizations.

(2) Office Hours
8:00 a.m. to 5:00 p.m. Monday through Friday.

(3) The service does not include:

(A) Treatment for emergencies occurring off campus.

(B) Treatment for chronic illness originating before entrance to school.

(C) Hospital care for any condition.

(D) Surgery.

(E) Medical care for wives or children of students.

(F) Definitive treatment for fractures, other types of injuries or illnesses of a more serious nature which require specialized types of treatment.

(G) X-ray examinations.

(4) House calls will be made during doctor's office hours if requested at the Health Service. House calls made or emergencies attended after doctor's office hours
272 Student Services

will be charged at the rate of $2 per call.

(5) No medical bills or charges will be paid by the Student Health Service unless officially previously approved by a responsible individual in the Health Service.

(6) In case of illness or emergency during office hours call:

USU Student Health Service,
Telephone SK 2-4100, Extension 435.

After hours call:

The University physician at his residence, or private physician, if preferred. If neither physician is available at the time, and the emergency is of an urgent nature, report directly to the Logan LDS Hospital for necessary care. The student should be aware of the fact that the services of a private physician as well as those of the hospital not covered by insurance will be at his own, personal expense.

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 obtained from the Cooperative English test which is required of all new, lower-division students.

Foreign Student Advisement

Students from outside the United States are provided with counseling assistance. A member of the staff is assigned to advise all students from abroad concerning problems of adjustment to University life. Through him students are referred to appropriate agencies and individuals on campus and elsewhere for further assistance. Further information may be obtained from Student Services Information, Room 133, Main Building.

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 townpeople from America and foreign lands and promotes numerous activities fostering international friendships.

Speech Clinic

The Speech Clinic provides help for persons having speech handi-
Student Activities

You are encouraged to participate in one or more of the following activities, dependent upon your available time and academic load:

(1) Intercollegiate Athletics. USU’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, you 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 direction 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-

Helpful Courses

Several courses are taught especially to help you with such personal affairs as marriage, food, clothing, and finances. Description of these courses is found in the departments offering them. They include: Preparation for Marriage and Family Living, FL&CD 20; Living with Children, FL&CD 10; Personal Finance and Consumer Problems, BA 85; Nutrition and Food Management, F&N 9; Simplified Clothing Construction, C&T 6; Clothing Selection (for men) C&T 15.
body officers, exercise faculty control of athletics.

(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 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 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, AWS president, the NSA coordinator, 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 Interfraternity Council, and editor of Student Life.

Associated Women Students. Every woman student properly registered and enrolled in the University is a member of AWS. This organization fosters interest and participation in campus activities. It is governed by its own elected officers and board.


Student Organizations

Departmental and Professional

Agriculture. Ag Club, Ag Economics Club, Agronomy Club, Alpha Tau Alpha, Alpha Zeta, Block and Bridle Club, Botany Club, Dairy Club, Horticulture Club, Poultry Club, 4-H Club, Vet Science Club.

Bacteriology. Bacteriology Club.

Business. Alpha Kappa Psi, STAT Club (Secretaries Today and Tomorrow).

Chemistry. American Chemical Society.

Education. Phi Delta Kappa, Utah State Education Association.


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.


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. Alpha Gamma Rho, Delta Sigma Phi, Kappa Sigma, Pi Kappa Alpha, Sigma Alpha Epsilon, Sigma Chi, Sigma Nu, Sigma Phi Epsilon, Sigma Pi.

Sororities. Social. Alpha Chi Omega, Alpha Omicron Pi, Chi Omega, Delta Delta Delta, Kappa Delta, Sigma Kappa.

Recognition and Honorary. Alpha Sigma Nu, Sigma Xi.

Regional. Bear Lake Club, Canadian Club, Dixie Club, Sudags, Weber, Arab Student Organization.


Scholarship. Phi Kappa Phi, Alpha Lambda Delta.

Service. Blue Key, Intercollegiate Knights, Spurs, Sponsors.

The first in the boat has the choice of oars.
Research Programs

D. Wynne Thorne, Director
Research Programs

Division of University Research, 279
Agricultural Experiment Station, 281
Engineering Experiment Station, 284
Utah Scientific Research Foundation, 285
School of Graduate Studies, 286
Bureau of Educational Research, 287
Utah Cooperative Wildlife Research Unit, 287
Rocky Mountain Fisheries Investigations, 288
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; CHAIRMAN, BUREAU OF EDUCATIONAL RESEARCH, W. A. Borg; PRESIDENT, UTAH SCIENTIFIC RESEARCH FOUNDATION, W. W. Lundberg; LEADER, UTAH COOPERATIVE WILDLIFE RESEARCH UNIT, J. B. Low; CHIEF, ROCKY MOUNTAIN FISHERIES INVESTIGATIONS, N. G. Benson.

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. Actual research operations are in several organizations. The principal organizations and areas of research are as follows:

Division of

University Research

D. W. Thorne, Director

Office in Agricultural Science 130

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; Vernon L. Isaelsen, Business and Social Sciences; Eldon J. Gardner, Biological Sciences; Norman Bauer, Physical Sciences; Walter R. Borg, Education; Allen W. Stokes, Forest, Range and Wildlife Management; Ethelwyn B. Wilcox, Home and Family Living; Clayton Clark, Engineering and Technology; J. Stewart Williams, School of Graduate Studies, and D. 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:

*Literature and Arts:* An anthology of German short stories has been prepared for publication in 1960. Special studies and writing are in progress on Hawthorn, use of two-word verbs, Soviet occupied Latvia, and American fiction writers. A new study has been initiated on wax as a painting medium.

*Biological Science:* Newly equipped laboratories are being established to study calls and other traits of birds. USU's Intermountain Herbarium has accumulated one of the best collections of plants of the intermountain area. Fruit flies are being used to study the inheritance of numerous traits.

*Physical Science:* A research program in the general area of biophysics is receiving major attention. Studies are underway on the biological effects of radiation and X-ray spectroscopy. Research in chemistry is devoted to the structure of chemical compounds and the role of metal complexes in biological reactions. The mineral resources of southwestern Utah and the geologic structure of northern Utah are being studied.

*Engineering:* New electronic equipment is being developed for measuring and reporting by radio snow and other precipitation on watersheds. The dynamics and mathematics of water movement under various conditions are being reduced to basic principles. The properties of soil in relation to certain types of construction and in relation to ground contacts for electronic current are also receiving attention.

*Social Science:* Books are in preparation on the "History of Political Thought," and "A History of Utah." Emigration from Germany to the United States is being studied. Investigations are evaluating the effects of highway bypasses on Utah communities. Other studies are devoted to finding effects of the use of alcohol on society.

*Education:* The merits of grouping students according to ability are being evaluated in terms of learning accomplishment and social adjustment. The use of teaching machines to improve the effectiveness of education is being studied at both college and elementary school levels. Other studies are devoted to better techniques for evaluating teachers and administrators.

*The only way to have a friend is to be one.*
Agricultural Experiment Station

R. H. Walker, Dean, College of Agriculture
D. W. Thorne, Director, Agricultural Experiment Station
Office in Agricultural Science 130

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 35 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 organized into about 170 research projects. Some of the 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 people. 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.

**Snow 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** located in the vicinity of Cedar City and 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-Fresian and Jersey dairy herd of about 100 purebred animals. Pasture investigations are also conducted.

**Evans Farm**, a 42-acre tract located south of Logan, is used in cooperation with the U. S. Department 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 just east of Logan, 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.

*Washington County Fruit Plots.* About three acres of land near Hurricane are rented by Washington County. The land is used for variety studies of deciduous fruits as part of a program to improve the economy of Southern Utah.

The Station also conducts experiments on a cooperative basis with farmers and ranchers on more than 250 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.

**USU Agricultural Experiment Station Field Days**

<table>
<thead>
<tr>
<th>Month</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>Performance Testing of Bulls</td>
<td>Animal Husbandry Farm, Logan</td>
</tr>
<tr>
<td>June</td>
<td>Strawberry Research</td>
<td>Farmington Field Station</td>
</tr>
<tr>
<td>June</td>
<td>Stone Fruit Virus</td>
<td>Farmington Field Station</td>
</tr>
<tr>
<td>July</td>
<td>Forage, Dairying, Turkeys</td>
<td>Snow Field Station, Ephraim</td>
</tr>
<tr>
<td>July</td>
<td>Field Crops Research</td>
<td>Greenville Farm, North Logan</td>
</tr>
<tr>
<td>July</td>
<td>Forage Crops and Beef Breeding</td>
<td>Panguitch Farm</td>
</tr>
<tr>
<td>July</td>
<td>Dryland Crops</td>
<td>Nephi Farm</td>
</tr>
<tr>
<td>August</td>
<td>Dairy Day</td>
<td>Dairy Farm, North Logan</td>
</tr>
<tr>
<td>August</td>
<td>Early Fruit Varieties</td>
<td>Howell Field Station, North Ogden</td>
</tr>
<tr>
<td>August</td>
<td>Canning Crops Research</td>
<td>Farmington Field Station</td>
</tr>
<tr>
<td>September</td>
<td>Flowers and Ornamentals</td>
<td>Farmington Field Station</td>
</tr>
<tr>
<td>September</td>
<td>Late Fruit Varieties</td>
<td>Howell Field Station, North Ogden</td>
</tr>
<tr>
<td>October</td>
<td>Animal Nutrition Research</td>
<td>Animal Husbandry Farm, Logan</td>
</tr>
<tr>
<td>November</td>
<td>Sheep Breeding and Management</td>
<td>Southern Utah Range Livestock Field Station, Cedar City</td>
</tr>
</tbody>
</table>
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, and 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 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.

Following are some of the areas of current research in the Engineering Experiment Station:

A study of concrete quality is being made for the State Highway Commission with the objective of improving the quality on highway projects and reducing the cost.

Soil cement used as a subgrade for highways, airports and shoulders for highways is being studied to determine its resistance to alkali and to obtain better design. Pozzolan and other additives are being placed in concrete to improve the quality not only of highways, but of runways and even basements and sidewalks.

Use of mobile electric generators on the farm is being investigated. Projects are underway on transistors and antennas as well as improving methods of grounding.
Movement of ionization patches in the upper atmosphere is being studied and new techniques are being developed for transmitting snow depth and water content information by radio out of the watersheds to central headquarters.

Improved techniques for electro-fishing, essential in fish management, are being developed.

Studies are underway to improve the performance of sprinkler irrigation nozzles. Significant advances are being made in the hydraulics of surface irrigation. Studies presently being conducted promise much better methods of handling and measuring water in steep mountain streams.

A method of evaluating the relative productive value of land has been developed and a study is underway on the use of gravel envelopes and the general hydraulic characteristics of wells.

Adjustment of automobile carburetors to give better efficiency at various altitudes is an active project.

The Station is cooperating with the Utah Scientific Research Foundation in the development of suspension and power-selector systems for off-highway tracked vehicles.

The performance of piles used to support structures when these piles are in a consolidating material is being studied. The action of flexible cylinders under earth loads is also being investigated.

Rocket design and behavior studies are underway in cooperation with some of the prime defense agency contractors.

Utah Scientific Research Foundation

W. W. Lundberg, President

J. A. Hardman, Project Director

Office in USRF Building, on Campus

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 a vehicle suspension and power selection system which has been incorporated into a 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
University 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: Wilford W. Lundberg, President; Daryl Chase, President of the University; Dee F. Wangsgaard, Hubert C. Ward, Ernest G. Earl and Blaine W. Hancey, Directors; James A. Hardman, Project Director; and J. LeMar Larsen, Secretary-Treasurer.

School of Graduate Studies

J. S. Williams, Dean

Office in Main 182

Each year at Utah State University more than a hundred students complete their work for an advanced degree. These degrees include the Master of Business Administration, Master of Education, Master of Forestry, Civil Engineer, Irrigation Engineer, Master of Science, 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 these 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.

He never was a friend who ceased to be one.
Bureau of Educational Research

J. C. Carlisle, Dean, College of Education
W. R. Borg, Chairman, Bureau of Educational Research

Office in Main 82-A

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.

Utah Cooperative Wildlife Research Unit

J. W. Floyd, Acting Dean, College of Forest, Range and Wildlife Management
J. B. Low, Leader, Utah Cooperative Wildlife Research Unit

Office in Forestry 301

The Utah Cooperative Wildlife Research Unit was initiated in 1935 through a Memorandum of Understanding between the Utah State University, Utah Fish and Game Commission, Wildlife Management Institute and the U. S. Bureau of Sport Fisheries and Wildlife. 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, fish and related fields.
The Bureau of Sports Fisheries and Wildlife has maintained a station at Utah State University since 1953 known as the Rocky Mountain Fisheries Investigations. Purpose of this research group is to study the factors affecting the fisheries of waters on public lands.

At present the investigators are concerned with the waters of Yellowstone and other national parks. Professional biologists study mortality, creel harvest, growth rate and other phases of the fishery of national parks and waters of other public lands. During the summer, wildlife management students assist in this research program.
Cooperative Extension Service

Carl Frischknecht, Director
Cooperative Extension Service

Administrators and Supervisors

DIRECTOR C. Frischknecht; ASSISTANT DIRECTOR C. A. Ballard; SUPERVISOR, HOME ECONOMICS PROGRAMS J. A. Huber; ASSISTANT SUPERVISOR, HOME ECONOMICS PROGRAMS J. A. Poulson; STATE 4-H CLUB LEADER G. T. Baird; ACTING STATE 4-H CLUB LEADER A. R. Kearsley; ASSOCIATE STATE 4-H CLUB LEADER G. L. Beckstrand; DISTRICT SUPERVISORS M. Broadbent, L. R. Hunnsaker.

State Subject-Matter Specialists

AGRICULTURAL ENGINEERS J. D. Wadsworth, W. B. Ringer; AGRONOMIST L. A. Jensen; ANIMAL HUSBANDMAN G. R. Henderson; CLOTHING SPECIALIST T. Johnson; DAIRY MANUFACTURING SPECIALIST A. J. Morris; DAIRYMAN J. Barnard; ENTOMOLOGIST G. F. Knowlton; FARM MANAGEMENT SPECIALIST L. C. Michaelsen; FORESTER AND RANGE MANAGEMENT SPECIALIST J. F. Vallentine; HOME MANAGEMENT AND HOME FURNISHINGS SPECIALIST R. H. Gardner; HORTICULTURE AND VEGETABLE CROPS SPECIALIST A. B. Call; INFORMATION SPECIALIST C. M. Kotter; IRRIGATION SPECIALIST G. Stringham; LIVESTOCK MARKETING SPECIALIST M. H. Taylor; NUTRITIONIST E. Miller; POULTRY SPECIALISTS C. E. Clark, C. I. Draper; PUBLICATIONS EDITOR J. Keller; RADIO AND TELEVISION SPECIALISTS S. L. Brower, A. L. Higbee; RECREATION SPECIALIST C. R. Jensen; SHEEP AND WOOL SPECIALIST Russell Keetch; SOCIOLOGIST W. A. DeHart; SOIL CONSERVATIONIST P. D. Christensen; VETERINARIAN D. W. Thomas; WILDLIFE SPECIALIST J. Berryman.

County Agricultural Agents


County Home Agents

BOX ELDER, B. M. Hansen; BOX ELDER, B. M. Hansen; CACHE, B. K. Lemon; CARBON, L. Merrill; DAVIS, K. P. Swindle; EMERY, M. Gardner; GARFIELD, F. H. Bardwell; IBERIA, B. T. Stevens; MORGAN, H. E. Bergstrom; MILLARD, L. Whitwatt; PIUTE, R. D. Coates; RICH, H. J. Wamsley; SALT LAKE, B. Palfreym, C. Dunn; SANPETE, S. S. Tuttle; SEVIER, B. S. Bastian; SUMMIT, N. Jensen; TOOELE, E. Darley; UINTAH, L. Searle; UTAH, E. W. Tyler; WASATCH, M. R. Bacon; WAYNE, M. S. Ezell; WEBER, M. Martin, R. Tippetts.

*On Leave.*
Cooperative Extension Service

Carl Frischknecht, Director

Office in Agricultural Science 120

Utah State University's Cooperative Extension Service is one of the main divisions of the University and in Utah is the educational arm of the U.S. Department of Agriculture. It was established in 1914 with passage of the Smith-Lever Act by Congress. The Extension Service is sponsored and financed jointly by federal, state and county governments. There is a Cooperative Extension Service in the Land-grant institution of each state.

The main functions of the Cooperative Extension Service are:
- To develop human leadership, resourcefulness and initiative;
- To supply factual information for discovering and solving problems; and
- To help people become more efficient, increase their incomes and raise their standards of living. The Extension Service takes the findings of research to the farms and homes of the state and brings unsolved problems back to the research workers at the University for solving.

Extension programs are planned jointly with the people. The demonstration method of teaching and the mass media are used extensively. Farm and home visits, group meetings, personal and circular letters and publications are used to supply educational information.

Administratively, the Cooperative Extension Service is a part of USU's College of Agriculture. Eight administrative and supervisory personnel and 27 subject-matter specialists comprise the staff at the state office. These staff members train, supervise and assist county agricultural and home agents and local leaders.

County Extension agents are located in 27 of Utah's 29 counties. At present there are 37 agricultural agents, and 22 home agents, and two consumer marketing agents.

The Extension program includes work with both adults and youth. About one-third of the time of Extension workers is devoted to 4-H Club work.

Programs emphasized are:
- (1) Efficiency in agricultural production;
- (2) efficiency in marketing, distribution and utilization;
- (3) conservation, development and use of natural resources;
- (4) management on the farm and in the home;
- (5) family living;
- (6) youth development;
- (7) leadership development;
- (8) community improvement;
- (9) public affairs.

To train leaders and supplement the Extension work done by county agents, the Extension Service sponsors free non-credit shortcourses and conferences in various subjects, at the University and at other locations throughout the state. These shortcourses are usually planned and conducted under the joint sponsorship of the Extension Service and cooperating groups. Field days are also held in cooperation with Utah State University's Agricultural Experiment Station and other groups.
# USU Extension Service 1960-61 Calendar

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 13-15</td>
<td>Older Youth Training Program</td>
<td>USU, Logan</td>
</tr>
<tr>
<td>August</td>
<td>Youth Conservation Camp</td>
<td>USU, Logan</td>
</tr>
<tr>
<td>August</td>
<td>Arabian Horse Clinic</td>
<td>Kaysville</td>
</tr>
<tr>
<td>October 10-13</td>
<td>Adult Leaders School for Women</td>
<td>USU, Logan</td>
</tr>
<tr>
<td>November</td>
<td>Adult Leaders School for Men</td>
<td>USU, Logan</td>
</tr>
<tr>
<td>December 9-10</td>
<td>Horticulture Short Course &amp; Convention</td>
<td>Salt Lake City</td>
</tr>
<tr>
<td>January 8-9</td>
<td>Canning Crops Short Course</td>
<td>Ogden</td>
</tr>
<tr>
<td>January</td>
<td>Conservation Officers Short Course</td>
<td>USU, Logan</td>
</tr>
<tr>
<td>January</td>
<td>Turkey Producers Short Course</td>
<td>Snow College</td>
</tr>
<tr>
<td>February</td>
<td>Feed Dealers &amp; Manufacturers Short Course</td>
<td>Provo</td>
</tr>
<tr>
<td>February</td>
<td>Young Couples Short Course</td>
<td>USU, Logan</td>
</tr>
<tr>
<td>February</td>
<td>4-H Club Leaders School</td>
<td>USU, Logan</td>
</tr>
<tr>
<td>February</td>
<td>Annual Weed Control Conference</td>
<td>Salt Lake City</td>
</tr>
<tr>
<td>February</td>
<td>Union Pacific Agricultural Car</td>
<td>Selected Counties</td>
</tr>
<tr>
<td>Feb. &amp; March</td>
<td>Health Forums</td>
<td>Selected Counties</td>
</tr>
<tr>
<td>March</td>
<td>Dairy Manufacturing Short Course</td>
<td>USU, Logan</td>
</tr>
<tr>
<td>March &amp; April</td>
<td>Garden Club Short Course</td>
<td>USU, Logan</td>
</tr>
<tr>
<td>March</td>
<td>Poultry Feed Men Short Course</td>
<td>Salt Lake City</td>
</tr>
<tr>
<td>June</td>
<td>Hatchery &amp; Poultry Breeders Conference</td>
<td>USU, Logan</td>
</tr>
</tbody>
</table>

*The future becomes the present if we fight for it.*
LeRoy A. Blaser, Director
Information Services and University Development

*Information Services, 295*

- University Publications, 295
- Newspaper Releases, 295
- Magazine Releases, 295
- Radio Programs, 295
- Television Programs, 295
- Program Bureau, 296

*University Development, 296*
Information Services and University Development

Good teaching, sound research and other practical services performed well are USU's chief means of public relations. As an aid to these efforts it has a Development program and Information Services. 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, magazines, radio and television stations, and by publishing appropriate bulletins and journals.

Information 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 and news of general campus events.

University publications include:

(1) A monthly University Bulletin series, devoted to the Catalog, University Summer School Catalog, the Home Study Catalog, the Audio-Visual Aids Catalog, and to bulletins featuring the various departments and offerings of the University, and to research by the Division of University Research and the Engineering Experiment Station.

(2) Brochures for conferences, workshops and other events.

(3) Extension Service Bulletins of an instructional type, in agriculture and homemaking especially.

(4) Agricultural Experiment Station Bulletins, reporting results of research.

(5) A Monograph Series featuring worthy essays, articles, lectures and speeches of USU faculty members of interest and worth to the public.

(6) Farm and Home Science, a quarterly magazine of state-wide distribution, featuring research conducted by the University and its affiliated organizations.

(7) The Alumni magazine, published nine times a year, containing news and features for USU Alumni.

(8) Student publications, including Student Life, a semi-weekly newspaper; Scribble, a quarterly magazine, and Buzzer, the yearbook.
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. The University supplies an average of two programs per day during the school year. Please see also Catalog section on Adult Education Services.

The Development Fund. A key part of the Development program is a Development Fund, a non-profit corporation (established August 11, 1958), to encourage grants, bequests, and gifts to the University—gifts of money, property, works of art, historical papers and documents, and museum specimens having educational, artistic or historical value. The Development Fund thus helps the University increase and improve its educational and other services.

A fifteen-man board of directors of this non-profit corporation represents five groups, as follows:

USU Board of Trustees: Henry R. Hurren, David W. Evans; Alumni Association: Joseph F. Cowley, Daken K. Broadhead, Charles G. Cowley, Rudy Van Kampen, J. K. Wheeler; the University Administration and Faculty: President Daryl Chase, Dee A. Broadbent, L. R. Humpherys; the Associated Students: Rolfe Kerr; General Public: B. H. Stringham, Marden D. Pearson, E. W. Jenkins, LeGrand Johnson.

Fund officers are: Rudy Van Kampen, chairman; J. K. Wheeler, vice-chairman; Dee A. Broadbent, treasurer; LeRoy A. Blaser, fund director.

Functions and powers of the Board of Directors are: (1) to determine, after consultation with the President of the University or with a University officer designated by him, and after consultation with the Alumni Council of the Alumni Association, the specific University projects for which gifts of money or property will be solicited; (2) to obtain from alumni and former students of the University and from other interested persons, corporations or foundations voluntary contributions to the University, and to establish such by-laws and policies as are necessary to carry out the purpose of the Fund; (3) to determine from time to time the methods of solicitation and publicity and to maintain the active interest of alumni and of the public in the Development Fund; (4) to elect and appoint such officers and committees and incur necessary expenses within its budget allowance as are needed for the proper accomplishment of its purpose; (5) to coordinate all University efforts relating to the Development Fund.

You are invited to request copies of University Catalogs, Bulletins and other literature of interest to you. Phone or write to Director of Information Services, 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, homemaking, 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.
Alumni Association

Joseph F. Cowley, President
USU Alumni Association

Joseph F. Cowley, President
LeRoy A. Blazer, Executive Secretary
Office in Information Services and Alumni Building

Utah State University Alumni Association now numbers more than 26,000 members. These members are the graduates and former students of Utah State, who are now keeping in touch with the University and supporting its activities through the work of the Association.

Purpose. It is the purpose of the Alumni Association to promote the 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, or $35 for a joint membership, both payable in $5 annual 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 Alumni, a magazine published nine months a year, full of Aggie news and reports 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 such campus events as Homecoming, Founders' Day, and the Senior Reception, as well as aiding in athletic and other 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 1959)**

_Bachelor of Science in Agriculture_

Alfred, John Glade
Askman, Billy Dean
Bair, Francis Leon
Barnard, Gerald R.
Beagle, John Francis
Bell, Donald Wayne
Bill, Ray William
Bingham, Edwin Theodore
Bingham, Robert J.
Briggs, Calvin Eli
Burgess, Peter Delbert
Carlisle, Gerald Leon
Carnahan, Glenn F.
Christensen, Morgan Dale
Christensen, Reuel Halbert
Clark, Orson Merrill
Clouse, Robert Elwood
Cooper, Gerald M.
Decker, A Lowell
Despain, Eleazer Assay
Dinsdale, Garry
Drake, Gordon Eugene
Erickson, Clarence Valdee
Sahibkran Abdul Kadir
Noori Fattah
Fay, Robert Eugene
Forsgren, Ralph Keller
Fowers, Kenneth C.
Gardner, Robert Wayne
Gardner, Walter Jack
Ghotb, Anayatollah
Godfrey, Ririe Mervin
Griffiths, Reed O.
Hansen, Kenneth John
Jensen, Royal Duane
Johnson, Archie Doyle
Johnson, Calvin
Johnson, Lamar John
Johnson, Glen
Jorge, Jose Antonio
Kent, Dexter Dean
Lamb, Frank Earl, Jr.
Memmott, Duane Preston
Miller, Donald Lewis
Minion, Gerald Douglas
Murphy, James Clair
Nelesen, Clark Reed
Olsen, John Deverell
Parcell, John Thomas
Parkinson, M. Claude
Petersen, Fred West
Peterson, Karl Raymond
Pickett, Merrill J.
Pickett, Lorin W.
Pond, James Marvin
Rasmussen, Don Lawrence
Remund, Johnny G.
Rice, Cleve A.
Richins, Robert John
Sesaweech, Tweeackdi K.
Sharp, Norman Kenneth
Shendi Kamil Abdul-Karim
Sorenson, Gary Maurice
Steele, Fred Brunt
Stock, Sherman Gentry
Sullivan, Dell
Theil, Harry Louis
Thompson, Richard Leon
Thompson, Sidney Grant
Tucker, Vearl Ray
Wadley, Don F.
Wagstaff, David Jesse
Ward, Harold Olen
Widdison, Chad Newell
Wilcox, Jack Acton
Wilson, Joseph Vance
Wright, Darrell Vincent
Wright, James Louis
Yuthasastakosol, Prasantrin
300 Graduates

Bachelor of Science in Business and Social Sciences

Adams, Grant Ware
Albright, Gene Charles
Albright, Richard Carl, Jr.
Alexander, Charles M.
Anderson, Cleon Dee
Anderson, Duane R.
Anderson, S. Clark
Ashdown, Edward William
Ashton, Kenneth Dale
Atkinson, Crae Pitt
Beck, George Albin
Beckley, Perry Clinton
Beckstead, Gordon Elmer
Berman, Ronald Alan
Bennett, Alan Douglas
Betzack, William Carl
Bishoff, John Perry
Bowen, Eldon Daniel
Bower, Elmer George
Brower, James Reed
Call, Laval J.
Capener, David Ray
Carson, Eldon Earl
Catmull, Deane
Chamberlain, William M.
Cheney, Sarah Jo
Christensen, Evan J.
Christensen, Kay Henrie
Clark, Delon Maynard
Clark, Ferris Elaine
Coates, Lawrence George
Coffman, Margaret
Conrad, Sally Peterson
Cowley, Jodie C.
Cragun, John Reuben
Croft, Robert Scott
Cutler, Milton Deverl
Cutter, Robert Bruce
Dabang, Ralph M.
Daniels, Thomas Emerson
Davis, Clark T.
Davis, Dexter Fredrick
Davis, James Cungino, Jr.
Devries, Wade Everett
Didericksen, Floyd Dale
Dieha, Carl Leonard
Doherty, Joseph V.
Everton, Richard Keller
Falslev, Doris Hansen
Farlow, Gerald Armon
Fase, David Laurance
Favero, Edward
Ferrara, Charles A.
Fluckiger, Stanford A.
Friel, Joseph Antony
Gephart, Robert F.
Gomez, Rudolph
Gunnell, Verlan P.
Haggen, Gilbert Leonard
Hall, Howard Croft
Hansen, Grace
Hansen, Ray D.
Harvath, Jack Alvin
Heaton, John Harold
Hill, Robert Ellis
Hoggan, Louis Brent
Hunsaker, Maurice Lynn
Hyde, Jon Wesley
Inama, Albert Robert
Ipsen, Robert Lee
Jensen, Bartell Cowley
Jeppson, Anita Helene
Jeppson, Charles
Johnsen, Allen Leron
Johnson, LeRoy Dale
Jones, Lawrence Paul
Jones, Richard Keith
Keller, Milton Boyd
Kermani Arastoo Irani
Killpack, Louis A.
Knuth, Robert Edward
Kubota, Albert Kaozu
Larkin, Fredrick Dane
Larsen, Lawrence B.
Leany, Laverl Benjiman
Lee, Joseph Elson
Lewis, Neal C.
Liddell, Daryl
List, Robert Frank
Lovell, Brent John
Lund, Gary Otto
Lye, William Frank
Mariani, Florindo
McCoy, John Milton
McFarland, Larry Dee
Mendenhall, Gordon Dean
Meyrick, Joseph Stanley
Miller, James Paul
Minson, David Ross
Moore, Marilyn
Moulton, Arlo Eugene
Murdock, Orrice Stratford
Niederhauser, June
Niederhauser, Larry D.
Oden, Donald Anderson
Olsen, O. Bard
Olsen, Reed Andersen
Olsen, William Arvid, Jr.
Oxenford, Clyde
Pandya, Jashvant Ray
Parker, Alton Deloy
Perry James P.
Pettigrew, Karl Ernest
Petty, Merril Ross
Phillips, Ivan George
Powell, Leland Max
Prestwich, Ronald Leo
Radford, David Lee
Rananaore, Annasheh M.
Raner, David Holden
Rasmussen, Clark Robert
Ream, John Norman, Jr.
Reeder, Richard Frank
Richards, Peter Watson
Roundy, Sally Kay
Russ, Bernard Matt
Russell, Wayne J.
Satterthwaite, Frank Deloy
Scheffel, John Henry
Schley, Robert Lloyd
Sheppard, George K.
Shotani, Isu0
Short, Paul Freeman
Sneddon, Kathleen Baird
Stanger, Ronald Leroy
Stephens, Jack Newel
Stocks, Thomas Albert
Stosich, Paul W.
Stringer, James Willard
Summers, Edmond Riley
Tatsugawa, Mitsuo
Taylor, Dennis Raymond
Thayne, Lloyd Martin
Thomas, Kenneth Eugene
Thomson, Doneal
Thurston, Stephen Wood
Tomlinson, Kenneth Larry
Torrence, Thomas C.
Valentine, Dale E.
Waldron, Ludell
Warren, Douglas Stewart
Watkins, Devere M.
Watterson, Florence
Weight, Jay Lawrence
Welch, David N.
Williams, Kenneth Glen
Willis, Cardon Weston
Willits, Richard Arnold
Bachelor of Science in Education

Adamson, Wayne K.
Almond, Reese Merl
Allen, Leota Hislop
Datwyler, Janice Allred
Allsop, Richard Warren
Anderson, Alice Marie
Anderson, Anna S.
Anderson, Delores
Anderson, Laree Pearl
Ashby, Carl Leroy
Ashby, June B.
Ashman, Charles Terry
Bair, Elaine
Baird, Arlan Randall
Baker, David Coombs
Baker, Garth
Bartolomew, Robert O.
Bateman, Karen Treseder
Beck, Donald Arlin
Bedke, Bruce Byron
Bell, Sidney Karen West
Belliston, Carol Page
Bennett, Elsie Jacobs
Benso, Patricia
Bertelsen, Jerry K.
Bingham, Adoree Preece
Blair, Boyd Nelson
Blain, Catherine Joan Moser
Blanchard, Alma Lane
Blanchard, Barbara J.
Blau, Glenna Deen
Booth, Lloyd Ellis
Bouwhis, Albert Leroy
Bouwhis, Myrna
Bowen, La Rae
Boyce, Nancy
Bridges, Sherwood Elgin
Briggs, Agnes Marshall
Brummett, Patricia Ann
Budge, Helen Arlene
Budge, Kenneth Huryn
Budge, Lowell Jensen
Buhler, Genevieve
Burkett, Afton C.
Call, Robert Anson
Capener, Gordon Lee
Capener, Richard A.
Chard, Zella S.
Checketts, Keith Thomas
Cheney, Alice Marie
Christensen, Claudia I.
Christiansen, Robert N.
Christiansen, V. Gayle G.
Chugg, Connie Jean
Clarke, Edna Shaw
Clinger, John William
Coffman, Denice
Cook, Zora Roberts
Cox, Marion Widdison
Cox, Mildred Janet
Cragun, Helen
Cragun, Norma D.
Crawford, Lucile
Curtis, Overton
Dabling, Helen Hobson
Davis, James Dale
Dawson, Marcia Marie
Dayton, Diane Louise
Depierre, Hazel Fern
Dixon, William Leroy
Doke, Gloria
Donohoo, David Owen
Dudley, Ruth
Durrant, Barbara Jean
Durtseh, Gerald N.
Dutson, Lellon S., Jr.
Dye, Marilyn Petersen
Eckman, Blaine D.
Eckman, Wayne D.
Elison, Pauline Rose
Ellett, Relia Mikkelson
Ellis, Adella Kendall
Ellison, Connie Rae
Ellsworth, Arnold T.
Erickson, Bruce G.
Erickson, Clara Genae
Erickson, John Fredrick
Fallis, Arvel Alonzo
Fielding, Leslie Delray
Fleming, Leah Parrish
Flinders, Leland Engh
Follett, Richard Frank
Fonnebeek, Carol Irene
Fowles, Arline
Frank, David Ball
Fryer, Thomas Garn
Fullmer, Gladys A.
Fullmer, Harlan M.
Garfield, Don Lamar
Garr, Constance Lucile
Geddes, Thora Hatch
Gee, Cerie Jeanne
Gerber, Barbara Lee
Gleave, John Evan
Gray, Juanita Darlene
Green, Ralph Horace
Grover, Pearl Petersen
Gudmundson, Kathryn
Jacqueline B.
Hafen, Douglas Clair
Hallows, Brice J.
Hancey, Gayle
Hansen, Ada Alene
Hansen, Gayla Lavay
Hansen, Norma Kaye L.
Hanson, Emil Otto
Hardy, Thelma Brown
Harris, Dee Lynnell
Harrop, Raymond William
Harvaith, Helen Daines
Haslam, Amaryllis Burton
Haslam, Larry Odell
Hatch, Merlin Olson
Healy, Marilyn Jane
Henderson, Lawrence
Henrie, Larry J.
Hersh, Ruth M.
Higgs, Barbara
Hirsch, Fay A.
Hislop, Charles Curtis
Hodges, Adella Mae
Hoggan, Irene Coombs
Holmes, Jolene
Holmgren, Jerilyn
Holyoak, Laura Nan M.
Horn, Priscilla Lee M.
Howard, Lorraine
Howells, Henry Doyle
Hucel, Mary A.
Hulling, Harold E.
Humphreys, Marlene
Hunsaker, Vera C.
Hurd, Lyle Burke
Illum, Mary Lou
Iverson, Beatrice M.
Ivy, Maurine
Jackson, Marilyn
James, Cynthia Garnett
Jennings, Maxine R.
Jensen, Carol Ann
Jensen, Karen Marie
Jensen, Sheryl Dian
Johnson, Beatrice G.
Johnson, Clara Joyce
Johnson, Richard T.
Johnson, Ruth Brimhall
Jones, Audrey
Jones, Daniel Gary
Jones, Sharon
Jones, Trilla D.
Jorgensen, Donald F.
Justesen, Blanche Maxfield
Kapp, Gary Christian
Kelson, Lora Elisabeth
Kennard, Leona D.
King, Exum Darrell
Kirby, Sharon Rose
Knight, Ruth Naibib
Knight, Sharon
Kondo, Lillian Kinuye
Krogh, Ronald Dean
Kunz, Colleen Beardall
Laidlaw, Allan Boyd
Lane, Frances Yvonne
Lapray, Anthony J.
Larsen, Karen Marie
Lasko, Joyce Newman
Last, Gwenivere
Leak, Dee Odell
Lenotti, Peter John
Lowham, Sharyll Ann
Long, Sherlynn Burnett
Lindhardt, Robert W.
Lewis, Margaret E. T.
Luthi, Vona Vee Nelson
Madsen, Hazel Wintle
Mallot, Marilyn
Marshall, Robert Karl
McCarrey, LuR
McCarrey, Marie R.
McCombs, Alta Kennington
McCurdy, Bert McKay
McCren, Eva Greenwell
McKinnon, Jane
McMurtrie, Joseph Byron
Tilley, Kay Louise McMurdie
Meeks, Jessie Ann
Merrell, Isabel Wade
Merrill, Darwin Gene
Merritt, Winfred
Meyer, Alice Ann
Miller, Ivone
Miller, Richard Leishman
Mitchell, Ellen May
Montague, Wendell G.
Montoya, Philip Delee
Moore, Eva Friend
Morgan, Jeanne
Morse, Ella Oborn
Mortensen, Ione Hunsaker
Mortensen, Sharon E.
Muir, Virginia
Nate, Ruth Larue
Nebecker, Jolene
Nelson, Rene E.
Nelson, Orval Dee
Nelson, Sylvia Margerie
Nish, Joan
Nixon, Helen C.
North, Ila Jean
Nuttall, Nancy
Nyman, Carl David
Olsen, Ariel Douglas
Olsen, Floyd Edgar
Otten, Alfred Clair
Paolielli, Lynne
Patterson, Mary Janett
Paul, Louise Blood
Paulick, Janice Ann
Pearl, Arnold Joseph
Perkins, Dianne
Petersen, Edna Jensen
Petersen, Mary Gayle
Peterson, Bessie Marie
Peterson, Evelyn
Peterson, Lynn Pond
Peterson, Merlin J.
Poorman, Nancy K.
Prestwich, Leo Steele
Procter, Sheldon F.
Pulley, Fonda R.
Reeves, Yvonne Mary
Rinderknecht, Joyce
Rindlisbacher, Jack
Robson, Ellen Celeste
Rohe, Geniell Thompson
Rowley, Ivan D.
Salerno, Anna Marie
Schley, Carol Janet Martin
Scott, Vaughn Leroy, Jr.
Sears, Robert K.
Sheffield, Don Hudson
Sheffield, Iola Renee
Shoup, Annette Mina
Silverster, L. Jay
Skyles, Paul Francis
Slater, Barbara Ann
Smyle, David E.
Smith, Larry Gene
Sorenson, Margaret Ann
Southwick, Ruth
Souza, Wilbert John
Stephens, Meriam Pledger
Stauffer, Donna Mae
Steinke, Robert Ward
Stevens, John Allen
Stoker, Anna Melle
Stoker, Douglas Moore
Strate, Abe H.
Stratton, Alfred William
Sutton, Lexie C.
Swain, Melba Gardner
Taylor, Richard Lee
Taylor, Ursel F.
Taylor, Wilma Mathison
Thayer, James Homer
Thompson, Margaret Ann
Thompson, Rose Burchell
Thorpe, Elizabeth Baugh
Tibbetts, Mary L.
Tilley, Kay Louise McMurdy
Tolbert, Kathleen Helen
Tracy, Dale Dee
Tremou, Frank Oliver
Tucker, Jared Lillard
Tueller, Rodney Edwin
Underwood, Joyce
Vandenbosh, Paul Henry
Vest, Gayle Pixton
Waite, Milton Fairchild III
Wanggard, Jean B.
Wanggard, Shirley
Ward, Glen Robert
Watt, Larue
Weeks, Calvin John
Welch, Shirlene Gardner
Wheeler, Mae Skeen
Wheelwright, Robert Lance
Whipple, Dorothea F.
Whitman, Janet
Wilks, Dixie
Williams, Benne Dee
Williams, Mark L.
Williams, Mary Ann
Winn, Patricia Wilson
Winward, Edward J.
Winward, Paul K.
Wright, Lapreal Nelson
Wright, William Arnold
Young, Frank White
Young, Vera Bailey

College of Southern Utah

Adams, Florene P.
Adams, Vera Jean
Albrecht, Karma
Anker, Mary E.
Bettis, Robert H.
Brian, Earrell Dean
Brown, Joanna Palmer
Carrico, James
Carruth, Fern Froyd
Clark, Sharon
Dalley, Sandra Emett
Dalton, Emma B.
Day, Raegene
Garrett, Clyde B.
Gillies, Burke O.
Heaton, Audree W.
Hinton, I. Verdell
Holt, G. Stanford
Ipson, Kathryn H.
Jones, Carol Ann Parry
LeBaron, George Alvin
Meeks, Heber Jesse
Miller, James Matheson
Mitchell, Vivian Hatch
Moss, Robert H.
Murdock, Gae L.
Peterson, Eva O.
Porter, Bobby L.
Quarnberg, Ferrell Archie
Riggs, Samuel Leland
Smith, Idona J.
Stapley, Dee El
Stoker, Dayle
Stratton, William Bud
Swapp, Lois Williams
Swindle, Roger D.
Ware, Samuel Dean
Willis, Elwood Ballard
Young, Marion Anderson
Graduates 303

Bachelor of Science in Engineering and Technology

Civil Engineering

Bailey, Charles Aloy
Bennion, Barton Evan
Blackwell, Daniel H.
Blood, Wesley Heber
Budge, W. Don
Corbridge, Norma Ezra
Cornelison, Jay Lee
Corry, Murray L.
Dixon, Neal Perry
Downs, Lloyd Howard
Gowan, Richard Owen
Haddad, Halim Nemi
Hatch, Paul
Isrealson, Clarence Earl
Jenks, Loren Delmar
Larson, Karl David
McArthur, Robin Perry
McCurtain, Bruce Alan
Merrill, Derwin Crockett
Miller, Francis Dwight
Nielson, Farrel Dwayne
Olsen, Edwin Carl III
Perkins, Larry V.
Petersen, Reed Joseph
Porter, Lloyd R.
Richards, Carl Bruce
Roper, Clinton Lovell
Seamons, Lynn Lee
Stokes, George L.
Suhr, Laron Delano
Thorpe, Joseph Derle, Jr.
Unten, John Eiwa Uyeunten
Williams, Harold Gene

Electrical Engineering

Anderson, Richard W.
Andrews, Dean Carlton
Baker, Raymond George
Barker, Eugene Vermont
Bergen, Robert Shill
Berry, Lewis Dale
Bingham, Frank Golden
Bolander, Vance Bently
Brown, Larry Lynn
Brown, William Patrick
Budge, Ezra Charles
Bundy, Donald Hamilton
Cahoon, Dick Bingham
Clark, Richard Joseph
Cook, Douglas Leonard
Cullimore, Boyd Lee
Danielson, Lionel K.
Davenport, Lynn Harold
Dolder, W. Scott
Douglas, Stephen Baird
Dye, Francis Calvin
Fisher, John Marvin
Frank, Victor Robert
Halamanondis, Phill G.
Hamilton, Lawrence L.
Hammond, Stanley Horace
Hunsaker, Raymond Delon
Jensan, Randall William
Jessen, David C.
Johansen, Lyle C.
Larsen, Gareld Rudolph
Larson, James M.
Lemmon, Richard Henry
Loosle, Marvin Willard
Madsen, Lorin Lamar
Marriott, John Edward
McKinney, William R.
Morrell, Richard Porter
Oman, Clyde Neil
Peterson, Joseph Hal
Peterson, Stanley C.
Robbins, William Jay
Skinner, Donald Morgan
Smedley, Milton B.
Stewart, Scott Paul, Jr.
Thain, Kay Paul
Thornley, Seldon Dennis
White, Larrie Dale

Tool Engineering

Albrechtsen, Udell S.
Andersen, Loyal Ransom
Anderson, Ralph S.
Barnard, Mark John
Elk, William August
Fowers, James Dee
Johnson, Dell Andrew
Jorgenson, Victor W.
Kowalewski, Albin M., Jr.
Marler, Lyman Albert
Mayers, Carl Leland
Palmer, Darrell Dean
Siggard, Paul Anthony
Smith, Richard Terry
Stuart, Warner
Taylor, Harry A.
Thomas, McKinley Beaves
Wallentine, Robert F.

Industrial Education

Ainscough, Robert Dean
Allen, Donald Keith
Anderson, Fred Clinton
Barber, Norman Ray
Beecher, Brent Evan
Bond, Milton Ellis
Cutter, Robert Wayne
Ducharme, Leo Mark
Dunn, Robert Vern
Fletcher, Robert W.
Fredrickson, Max Gene
Gannon, Russell James
Griffiths, John William
Haslam, Martin Clair
Howlett, Glen G.
Iverson, Harley Pratt
Jorgenson, Douglas
Lunt, Milton B.
Maathuis, Elzo J.
Mayhem, Sterling Ray
Overson, Louis Eugene
Pendleton, Samuel B.
Rimington, Ronald Dale
Rock, Gerald Peter
Rowley, Collins
Savage, Lynnwood Emmett
Shepherd, Lee M.
Smith, Hyrum Whitaker
Starley, Vernon Black
Swapp, William
Wilkey, Ramon Madsen
Wilson, Grant J.
Wyatt, Sidney Ball
### Industrial Technology

Allen, Lamont Dennis  
Anderson, Byron Clive  
Anderson, William Fred  
Bagley, Carnell McKay  
Bagley, Weldon D.  
Blanchard, Raymond Reid  
Campbell, Glen Dean  
Coombs, Douglas Eugene  
Coombs, Vernon H.  
Crawford, Russell Mack  
Critesfield, Noel R.  
Curtis, Glen Leslie  
Daines, Tracy Homer  
Erickson, Ree B.  

Erickson, Richard Bryan  
Farnsworth, Fredrick J.  
Hansen, Hyrum Atkin  
Hansen, Leon R.  
Hatch, Keith W.  
Jensen, Ellis R.  
Markowitz, Paul L.  
McReynolds, Boone K.  
Mehring, William Henry  
Miller, Albert E.  
Moore, Sheldon Edward  
Ospital, John Louie  
Robins, John Lucas  
Roper, Devon Jay  

Schiess, John Kennard  
Smith, Thomas Edward  
Smith, Val  
Sonen, Stewart Francis  
Sorensen, Edward Ralph  
Stuart, James Hodges  
Sunada, Ray Sakae  
Thompson, Carlos Eugene  
Tueller, Bennion Lamont  
Van Orden, Leland Hugh  
Welch, Harvey Dewain  
Wheelwright, Robert Jay  
Wilding, Walter Reid  
Woodruff, Dale Moroni  
Wright, Dave Lee

### Bachelor of Science in Family Life

Blanc, Anice Marie  
Brighurst, Renee  
Buxton, Clarion  
Call, Evelyn  
Christiansen, Flora Jean  
Christiansen, Joan  
Clark, Helen Myrtle  
Cooper, Annette  
Dansie, Joyce Marie  
Dean, Norma Kay  
Furness, Noreen  
Godfrey, Judy Pond  
Hall, Luanne  
Hardy, Patricia Ruth  
Hull, Nancy Ann  
Jenson, Sara Jeanne  
Kennard, Frances Marie  
Lambert, Martha Leone  
Larsen, Ruby Jean  
Law, Loraine Baird  
Marston, Carolyn  
McConkie, Alta Geniel  
McDermott, Betty Baker  
Stephenson, Jacklyn Olsen  
Ormond, Delores Gayle  
Pace, Etta  
Pingree, Barbara Schaub  
Ray, Annette  

Ritchie, Diane  
Sadler, Joyce  
Sampson, Melba Louise  
Smith, Elveda  
Stephenson, Carolyn Sue  
Stone, Margaret Louise  
Swenson, Arnell  
Thomson, Ruth Smith  
Wagstaff, Barbara Ann  
Walker, Virginia  
Weight, Hazel Hallie  
Williams, Phoebe Alice  
Yardley, Jolene  
Yonk, Merlene

### Bachelor of Science in Forest, Range and Wildlife Management

#### Forest Management

Barker, Rodman Nicholas  
Beaver, Howard Godfrey  
Binando, James  
Cadzow, George Adams  
Carpenter, Boyd Harris  
Coward, Philip Vaughan  
Deeming, Ralph E.  
Deeming, John Edward  
Duda, Teddy Michael  
Emden, Albert Charles  
Glenn, John Robert  
Hanson, Michael Larry  
Hopson, Terry Devere  
Jackson, Ned Robert  
Jensen, Lee Warren  
Keddy, David Frances  
Keetch, Max Russell  
Kline, Leroy Masato  
Lillie, Robert Marshall  
McKinzie, Gregorio O.  
Naughton, Gary Grant  
Oshima, Edwin Masato  

Pangman, Hugh Gene  
Petersen, Gary E.  
Prince, Joseph Merle  
Rolfson, Varold P.  
Skabelund, Paul Hanley  
St. Andre, Gerald  
Stevens, Gordon James  
Vaughan, Donald Eddy  
Walker, Peter James  
Wirth, Archer W.  
Zohner, Dahl Lemmon

#### Range Management

Baxter, Garth  
Beardall, Louis E.  
Burrows, Ervin Carl  
Butler, Ross Edward  
Cisco, Ralph Clarence  
Cox, Ted E.  
Dahlen, Robert W.  
Davies, Robert Richard  
Davis, William Farrell  
Despain, Merrill L.  
Dittmer, Kenneth Roger  
Hougaard, John Louis  
Jensen, Delles Arlen  
Mayo, James Miller  

McKinley, Robin  
Pettingill, Erle Leroy  
Pint, William Edward  
Ritchie, Don Clyde  
Scotter, George Wilby  
Stott, Delmar Clark
Wildlife Management
Bailey, Leslie Edgar
Bates, James William
Berseth, William Duane
Blackard, Jerry James
Derr, Otto Ernest
Donovan, John James
Dotson, Phil
Elinson, Alan Douglas
Fair, Edwin Blaine
Fene, Kim Mark
Fill, Charles Richard
Hansen, Keith Stanley
Johnson, Fred Allen
Kinsky, Arthur Michael
Kirch, Elden D.
Kleinsmith, Dean S.
Lollock, Donald Leo
Long, Wayne Everett
Nelson, Gary Leroy
Nelson, Kendall L.

Bachelor of Science in University College
Adamson, David Lowry
Alai, Barbara
Amarino, Neal Thomas John
Athey, Thomas Henry
Bartschi, Don Fred
Berlin, Edward Clair
Bothe, Valoy Jensen
Brana, Alfred Anthony
Brillantaine, Richard
Bruno, Perry S.
Burke, Austin Reed
Campbell, Kay Ronald
Casey, Patrick Howard
Christensen, Diane
Christensen, Val Rigby
Clark, Janet Velos
Cook, Joseph Vernon
Coombs, Marlene Boderro
Cowan, Melba Jean
Dahlberg, Gerald Carl
Despain, June Joanne
Dewey, William Thyayne
Donohoo, Dee Edgar
Dorst, Ronald Vallison
Eccles, Mayzie Ellen
Egebert, Larre Nyman
Eye, Warren Gene
Fallenkorg, Orian Ann
Ferney, William Richard
Fillmore, Sidney James
Floyd, Lyman John
Gibbons, Robert Baer
Gleason, Ann
Griffin, Richard Nelson
Hale, Marlene M.
Hall, Leslie Jane
Hamilton, M. Spencer, Jr.
Hansen, Kenneth Royce
Hansen, William Kay
Harris, Sonja Ann
Haycock, Marcia Kirkham
Hermberg, Paul Arno
Gee, Shirley Hillman
Holmgren, Dennis Arthur
Hunsaker, J. Neil
Hurren, Weiler Reeder
Isom, Margene
Jensen, Kent Anderson
Jessen, David C.
Johnson, Mary Alice
Jones, Lewis Kimball
Kim, Sedong
Knighton, John Thomas
Larsen, Rheta Eleanor
Lewengrub, Stanley Jack
Lind, Vance Gordon
Lyon, Thomas Jefferson
Manoa, Donald Kealoha
Marshall, John Fredrick
Maughan, Kathryn Anna
Maughan, Richard Reed
Maxwell, Molly Tucker
McCormac, Donald Gene
McGregor, Mark Duane
McLaughlin, Howard B.
Mecham, Eldon James
Mebas, Arthur Athanasios
Melartin, Kiri M.
Merrill, Elizabeth Munson
Merrill, Steven L.
Mills, Joseph Deverl
Mollazal, Yazdan
Morris, Marijane Free
Nelson, Jerry W.
Neuberger, Kirk Madison
Nielsen, Jay Lamb
Olsen, Janet Richards
Orchard, Robert A.
Orullivan, George Duane
Parker, Verlyn
Paul, Merlin Gene
Perkes, Robert Ray
Phungsoondara, Thira
Price, Delmar
Ricks, Maureen
Rocchio, Thomas Joseph
Schmitt, Rupert Peter
Schmutz, Clare Andrew
Schneider, Paul Huth
Schooff, Maury Wintle
Sherwood, Joseph Gerard
Smith, Neil H.
Stewart, Scott Paul, Jr.
Stromberg, Arnold Banks
Stueki, Mary Rae
Tarbet, Floyd
Terry, Nolan Lynn
Tolman, David Claudius
Transtrom, Franklin D.
Uyematsu, Juno
Vandegraaff, Frederic R.
Vest, Margaret Ann
Warner, Dale James
Weeks, Gary Lynn
Woodbury, Elrod Taylor
Woods, Rae Cote
Woodward, Vada Lee
Worlton, Dale Reid
Young, Moana Korth

Master of Education
Barker, Clayton Lee
Cox, Alvord Levi
Dittmer, Veda Karchner
Fietkau, Lorin Ross
Hill, Carl David
Jenson, Richard Milton
Johnson, Howard Melvin
Longhurst, Robert Max
McDoniel, Estes Morgan
Mitchell, Andrew Jackson
Morrill, Shardon Hugh
Staples, Emily Speirs

Nish, Darrell H.
Oberholtzer, Melvin C.
Ogden, Wendell S.
Seefeldt, Ralph E.
Smith, Richard Foster
Stone, Roderick Clyde
Strunk, Tom Henry
Sullivan, John Omeer
Winn, David S., Jr.
Yuill, Thomas M.
306 Graduates

Master of Forestry
Thompson, Jack Everad

Master of Science
Allen, Nard Vee
Anderson, Jarvis Lynn
Anderson, Loran C.
Ashdown, Rex Richard
Baker, Joe E.
Balls, K. Gerald
Barney, Leroy
Barrus, Douglas A.
Beeman, Harold R.
Berg, Carl R.
Berghout, Leonard N.
Beutler, G. Leon
Bishop, Lars Mahonri
Box, Diane Weber
Bradford, Donald Hamilton
Brown, Boyd Lewis
Brown, Carleen S.
Bunker, Reed Charles
Burg, Ruthe Blanche
Burr, Jack F.
Butter, Vern R.
Burg, Mabel Grace
Cady, Bryan Virgil, Jr.
Caskey, Charles Frederick
Caskey, Floyd H.
Carter, Russell Keith
Chen, Shih-ping
Clark, Ralph B.
Cloward, Dix W.
Couch, Howard William
DeRemer, Edgar Dale
Dhillamal, Amrik Singh
Doney, Ronald Conrad
Douglas, Lowell A.
Eastin, James Lewis
Eastman, Rex Delor
Edlund, David Oscar
Esfandary, Malek Mansour
Evans, Gary Ferd
Farmer, James Eugene, Jr.
Farmer, Kelly Niel
Finchum, Willis Arnold
Fok, Yu Si
Fonnesbeck, Paul V.
Fujiwara, Osamu
Gardner, Brigham Delos
Gardner, Thurman William
Gebhards, Stacy Victor
Giles-Saenz, Antonio Hector
Gill, Tejinder Singh
Giroux, J. Fabian
Glover, David Val
Godfrey, Kenneth Wendell
Green, Edwin Carl
Grover, Loren Homer
Gunby, Paul T.
Hansen, Keith D.
Heinz, Don J.
Hibler, Charles Phillip
Holyoak, Owen J.
Hunsaker, Kenneth Burnice
Hyer, Gladys Christensen
Imam, Abdul Gallal Ibrahim
Inman, Walter Roy
Jackson, Ashlaug Jacobson
Jarrett, J. Ray
Jensen, Mary Woosley
Johnston, Thera Christensen
Kalibhor, Pundlik Namdeoao
Khan, Muhammad Abdul
Haifee
Knight, Arlin Dalley
Kobe, Jack E.
Kurzhals, Ina W.
Lacy, Charles Harper
Larson, Clifton Blaine
Larson, Donald B.
Larson, Eldrid Stuart
LeBaron, Francis Cheney
Liechty, Elden Elmer
Lindsay, Ben W.
List, Peter
Martin, Charles W.
Mattson, Burke W.
Meeham, Arlin LaGrand
Mellor, Ashel Rex
Mendini, Arthur H.
Meservy, Royal Ruel
Mortimer, Robert George
Murphy, Lester James
Nelson, Louis Lenzi
Nielsen, Reese David
Noble, Mary McKinlay
Olsen, Robert Hyrum
Olson, Harold Frederick
Page, William Edward
Parkinson, Camilla Bair
Pendse, Pratapshiba
Chintamani
Petty, Cleo M.
Pollyzopoulos, Nicholas A.
Poulson, Brooks Henry
Prestwich, Lyn
Randeria, Bhupendra
Virmukhiel
Rivers, Arthur L.
Roghaar, Ralph
Rognerud, Bengt
Rose, William Horace
Ross, Cleon W.
Sessions, Foss B.
Shearer, Raymond Charles
Sherwood, Glen Alan
Skabelund, Dean O.
Skabelund, Nancy Ann
Bowen
Skinner, Halver Morgan
Smith, Jordan Grant
Smith, Kay Darrell
Smith, Kent Farrell
Swain, Donald Glenn
Taylor, Fern Olsen
Taylor, Richard Melvin
Taylor, Wheatly Joyn
Thrasher, Marvin Edward
Tucker, Melvin Leroy
Turner, John Howard
Uludag, Nevzat
Wagstaff, Robert K.
Wallace, Gerald Kent
Warner, W. Keith
Washburn, Dewain Calvin
Welburn, Wayne
Welling, Charles Lyman
Whatcott, William John
Wiggins, Evelyn LaVerne
Wight, Jared Ross
Williams, Benne Dee
Winterton, Bert W.
Withers, Russell Vernon
Wood, Bernadean
Workman, Garr William

Doctor of Philosophy
Hull, Alvin C., Jr.
Lloyd, Russell Duane
Mohanty, Prasanta Kumar
Neher, David Daniel
Neuhold, John Mathew
Raleigh, Robert Joseph
Shumway, Richard Phil
Soliman, Mostafa Mohammed
Wolfe, William John
Utah State University Faculty for 1960-61

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 years these were received and the schools from which received; a brief summary of his training, experience or 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.

CHASE, DARYL (1945) President; Professor. BA 1927, U of U, MA 1931, PhD 1936 U of Chicago. Dean of Students USU 1945-1951; Director of Public Relations USU also 1951; Director of College of Southern Utah 1961-1964; Director of various LDS Institutes of Religion 1936-1945. Author of Christianity Through the Centuries and Joseph the Prophet.


ALLEN BERT (1940) Head of Photographic Service; Instr. in Photography. Graduate White School of Photography 1923, advanced work with Mortensen, Bartlett School of Color Photography 1949, Harrison School of Corrective Portraiture 1948. CAA certified instructor in Civil Air Regulations, Navigation, Meteorology.

ALLRED, A. FULLMER (1945) Box Elder County Agricultural Agent. Ext. Asst. Prof. BS 1938 BYU, Sanpete County Agent 1952; Carbon County Agent 1945.

ALLRED, J. R. (1958) University News Editor; Instr. in Journalism. BA 1950 U of U; graduate work at Colorado State U; Sports Publicity Director, CSU.

ALLRED, KEITH REID (1957) Asst. Prof. of Agronomy. BS 1951 BYU, PhD 1955 Cornell U.


ANDERSON, JAY O. (1951) Prof. Poultry Husbandry BS 1943 USU, MS 1948, PhD 1950 U Maryland.

*ANDERSON, ROICE H. (1947) Prof. Agricultural Economics. BS 1939 U of Wyoming, MS 1941, PhD 1943 Cornell U.


ARGYLE, RELL F. (1954) County Agricultural Agent; Point IV Assignment in Iran 1954, Morgan County Agent 1957, Ext. Asst. Prof., BS 1940 USU, Graduate work BYU.


ATKINSON, SHERWIN (1957) Research Asso., Utah Agricultural Experiment Station, BS 1953 USU.

BACON, MARY R. (1948) County Home Agent, Ext. Asso. Prof., BS 1928 U of U, Graduate work U of U.


*On leave.
BAIRD, GLENN T. (1946) State 4-H Club Leader, Asso. Prof. Extension Agronomy Specialist 1947, Beaver County Agent 1946, County Agent (Montana) 1937, BS 1935 USU, Graduate work USU, Cornell, U Maryland.

BAKER, H. (1950) Asst. County Agent (Montana) 1937, BS 1925 USU, Attended coaching summer school for several years at USU, U of U.


BARDWELL, FLORA H. (1950) County Home Agent, Ext. Asst. Prof. BS 1940 BYU.

BARLOW, JOEL C. (1946) County Agricultural Agent, Iron County Agent 1946, Ext. Asst. Prof. BS 1938 USU, Graduate work at Oregon State C, USU.


BATEMAN, GEORGE Q. (1924) Prof. Dairy Industry, BS 1922 USU, Agent for Bureau of Plant Industry summers of 1919-1922; tester for Dairy Herd Improvement Asso. 1922-1924; Agent with Dairy Research Branch USDA 1931-1946.


BELL, WILLIAM HAROLD (1924) Prof. Business Adm. BS 1923, MS 1931 USU, Graduate work U of Ore.; special training at IBM. Asst. Registrar 1924-1929, Registrar 1929-1955 at USU.

BENDIXSEN, KAY R. (1952) County Agricultural Agent, Ext. Asst. Prof., Garfield County Agent 1952, BS 1951, MS 1952 USU.

BENNETT, JAMES A. (1945) Prof., Head, Dept. Animal Husbandry; BS 1940, MS 1941 USU, PhD 1957 U of Minn.

BENNETT, WILLIAM H. (1937) Acting Dean, Director Div. of Agri. Science; Prof. Agronomy. BS 1936-MS 1948 USU, PhD 1957 U of Wisc. Author of Fifty Years of Dryland Research at Nephi Field Station.


BERGSTROM, HELEN E. (1958) County Home Agent, Ext. Asst. Prof., BS 1939 USU, Graduate work 1959 USU.


BIDDULPH, CLYDE (1946) Prof. Physiology; AB 1936 BYU, PhM 1939-PhD 1940 U of Wisc.

BIGGS, ERNEST O. (1944) County Agri. Agent; Ext. Asst. Prof. BS 1926 USU. Graduate work 1937 U of So. Calif.

*BISHOP, A. ALVIN (1946) Prof. Civil-Irrigation Engineering; BS 1939-Ms 1938 USU.

BLAKE, JOSEPH T. (1956) Asst. Prof. Veterinary Science; BS 1949 BYU, MS 1950-PhD 1955-DVM 1956 Iowa State C.

*BLANCH, GEORGE T. (1934) Prof., Head, Dept. Agri. Economics; BS 1930-MS 1931 USU, PhD 1941 Cornell U.


BOOTH, THORNTON Y. (1953) Asso. Prof. English; Coordinator Liberal Studies Curriculum, AB 1941 BYU, PhD Stanford U.


BOYLE, WILLIAM S. (1945) Prof. Botany; BS 1937 BYU, MS 1939, PhD 1943 U of Calif. Postdoctoral work U of Wisc.

BRITE, J. DUNCAN (1933) Prof. History. BA 1922 U of Wyo., MA 1924, PhD 1937 U of Chicago. Postdoctoral research in German State Archives.

BROADBENT, DEE A. (1938) Business Manager, Treasurer; Prof. Agri. Economics, Marketing; BS 1936 USU, MS 1938 U of Ill.

BROADBENT, MARDEN (1938) Supervisor County Agents; Asst. Livestock Specialist 1946, Duquesne County Agent 1941, Salt Lake Asst. Agent 1938, Asso. Prof. BS 1937 USU, MS 1951 U of Ill., PhD 1960 U of Wisc.


BUDGE, W. DON (1950) Engineering Instr., BS 1959 USU.

*BUDGE, PEARL S. (1947) Asst. Prof. Education, BS 1927-MS 1956 USU.


BURGOYNE, DAVID A. (1921) Asst. to Dir. Agri. Experiment Station; Prof., BS 1919 USU, MS 1917 U of Ill.


BURNINGHAM, MELVIN S. (1945) County Agricultural Agent, Salt Lake Agent 1945, Washington County Agent 1949, Ext. Asso. Prof., BS 1937 USU.

BURTENSHAW, RAY (1944) County Agricultural Agent, Juhb County Agent 1950, Plute County Agent 1945, Weber Asst. County Agent 1944, Ext. Asso. Prof., BS 1940 USU.

*BURTON, THEODORE M. (1943) Prof. Chemistry, AB 1932, MA 1934 U of U; PhD 1951 Purdue U.

BUTCHER, JOHN E. (1955) Prof. Animal Husbandry; BS 1950, MS 1952 Montana State C.; PhD 1956 USU.

CAINE, ANN C. (1943) Instr. Library Science, BS 1945 USU.


CALL, ANSON B., JR. (1925) Asso. Prof. Horticulture, Ext. Horticulture Specialist, Box Elder County Agent 1949, Washington County Agent 1935, Utah Asst. County Agent 1928, BS 1927, MS 1928 BYU.


CAMERON J. ELLIOT (1956) Dean of Students; Prof. Education, BS, MS 1949 BYU. Graduate studies at U of U, BYU.

CANNON, MELVIN C. (1947) Prof., Head, Dept. Chemistry; BS 1933, MS 1938 U of U; PhD 1941 Boston U, Postdoctoral Studies U of Pittsburgh, Illinois Institute of Technology, Cornell U.

CANNON, ORSON S. (1948) Prof., Head, Dept. Botany and Plant Pathology; BS 1935, MS 1937 USU; PhD 1943 Cornell U.


CARTER, PEARL J. (1943) Asst. Prof. Library Science; BS, MS 1948 USU.


COATES, RUTH D. (1946) County Home Agent, Ext. Asst. Prof., BS 1943 USU.

COCHRAN, GEORGE W. (1945) Prof., Botany, Plant Pathology, BS 1941, MS 1942 Kansas State C, PhD 1946 Cornell U.

COLE, LARRY S. (1939) Prof., Head, Dept. Electrical Engineering; BS 1940 U of U, MS 1945 USU, EE 1950 Stanford U.

COLLIER, ROBERT P. (1958) Acting Dean, C of Business, Social Sciences; Prof., Head, Dept. of Business Admin., Secretarial Science. BA 1942 Reed C, PhD 1955 Stanford U.

COOK, C. WAYNE (1940) Prof. Range Management; BS 1940 Kansas State C, MS 1942 USU, PhD 1950 Texas A & M.


CULMSEE, CARLTON F. (1946) Dean, University C; Prof. American Civilization. BS 1932 BYU, MA 1937, PhD 1940 State U of Iowa. Research, teaching 1955-1956, National Chengchi U, Formosa, Director of Extension Division and Head of Journalism Dept. at BYU. Editor of Utah Sings, Vol. II.


DALBY, MAX F. (1957) Dir. Bands; Asst. Prof. Instrumental Music, AB 1942 BYU, MA 1950 San Diego State C; Graduate work USU, U of U.

DANIEL, T. W. (1944) Prof. Forest Management; BS 1934, MS 1936, PhD 1942 U of Calif., Dir. Clarke McNary Tree Nursery; Fullbright Research Scholar Austria 1951-1952.
DANIELS, PAUL R. (1953) County Agricultural Agent; Box Elder Asst. Co. Agent 1953, Ext. Asst. Prof., BS 1948 USU.

DARLEY, ELIZABETH (1954) County Home Agent; Ext. Asst. Prof. 1935 USU; Graduate work USU, U of Idaho.


DAVIS, LYNN H. (1952) Asst. Prof. Agricultural Economics; BS 1949, MS 1953 USU.


DEWEY, WADE G. (1956) Asst. Prof. Agronomy; BS 1953 USU, PhD 1966 Cornell U.


DIX, D. C. (1956) Experiment Station and Agriculture Editor; Formerly staff writer Salt Lake Tribune.


DOWNS, LOIS (1949) Asso. Prof. Physical Education, BS 1945, MS 1949 USU. Doctoral work U of C.

DRAKE, ELDON M. (1951) Asso. Prof. Education; BS 1943 USU, MA 1949, PhD 1951 Iowa State C, visiting prof. Audio-Visual Aids Long Beach State C.

DRAPER, C. L. (1945) Prof., Head, Dept. Poultry Husbandry; BS 1939 USU, PhD 1943 Iowa State C.


DYBOWSKI, EDWARD J., Sergeant US Army (1959) Administrative NCO, Army ROTC.

DYER, DOROTHY T. (1958) Dean, College of Family Life; Prof. Family Life; BS 1918 Ohio State U, MA 1938 U of Minnesota, Author The Family Today.

EAMES, RUBY (1954) Asst. Prof. Family Living-Child Development; BS 1941 USU, MS 1955 Iowa State C.


EISENSTEIN, IZYDOR (1959) Asso. Prof. Mechanical Engineering; BS 1940, DIPIL. ING. 1942 Israel Institute of Technology, Haifa; On academic staff Israel Institute of Technology, Consulting Engineer, fourteen years industrial experience.

ELICH, JOE (1946) Prof. Mathematics; BS 1940 USU, MA 1942 U of Calif. Doctoral work UCLA.


ERICKSON, SYLVAN (1928) Controller; BS 1928 USU, USU Accountant, 1928-1945 Asst. Secretary, Treasurer, Asst. Secretary Board of Trustees 1945-1953 USU.

ESPLIN, GRANT (1946) County Agricultural Agent, Weber County Asst. Agent 1946, Ext. Asst. Prof. BS 1943 USU.

ESPLIN, JAMES LYNN (1958) Asst. Agricultural Agent, Ext. Instr., BS 1954 USU, Graduate work USU.

EYRE, H. DEAN (1947) Purchasing Agent; BS 1943, MS 1957 USU.

EZELL, MILDRED S. (1959) County Home Agent; U Louisiana Home Agent 1955, Ext. Asst. Prof., BS 1951 LSU.
312 Faculty


FINCH, RAY H. (1955) County Agricultural Agent, Emery County Agent 1955, Ext. Asst. Prof., BS 1938 USU, Graduate work USU, BYU.

FISCHLE, JOSEPH (1959) Captain USAF; Asst. Prof. Air Science, BS 1950 U of N M.

FINCH, MS

FLAMMER, FLOYD, FLAMMER, FARNSWORTH, 312 Faculty Civil Engineering, BS 1952, MS 1953 USU, PhD 1958 U of Minnesota.

FOGELBERG, THELMA (1920) Asso. Prof. Languages, BS 1929 USU, MA 1933 U of So. Calif., PhD 1939 L'Universite' de Paris, France. Graduate work La Escuela de Verano —La Universidad de Mexico, special studies in Spanish in Guatemala City.


FRANCE, EDWARD L. (1940) Asst. Prof. Technical Education; BS 1941 USU. Graduate work USU.

FRANDSEN, ARDEN N. (1936) Prof., Head, Dept. Psychology; BS 1927, MS 1929 U of U, PhD 1932 U of Minnesota.


FULLER, PAULINE (1951) Asst. Prof. Physical Education; BS 1939, MS 1953 USU.

FUNK, C. DENNIS (1953) County Agricultural Agent, Salt Lake Asst. Agent 1953, Ext. Asst. Prof., BS 1953 USU.


GARDNER, ELDON J. (1949) Prof. Zoology, BS 1934, MS 1935 USU; PhD 1939 U of Calif. Postdoctoral work U of Calif., Author of Genetics Laboratory Exercises.

GARDNER, MARY ANN (1960) County Home Agent, Ext. Instr.; BS 1960 USU.


GERBER, ROBERT K. (1943) Asst. Prof. Horticulture; BS 1932, MS 1935 USU, Doctoral work Ohio State U.


GREAVES, MARGARET Instr. English Dept.; BA 1954, Graduate work at USU.

GREENWOOD, DELBERT A. (1946) Prof. Biochemistry, Pharmacology; BS 1926, MS 1930 BYU, PhD 1946 U of Chicago.

GRIMSHAW, PAUL R. (1952) County Agricultural Agent; Grand County Agent 1952, Ext. Asst. Prof. BS 1948, MS 1949 USU.

Faculty 313


GUTHRIE, DARREL W. (1958) Instr. HPER; BS 1951 USU; Graduate work USU.

GU YMON, E. LEE (1931) County Agricultural Agent, Summit County Agent 1940, Rich County Agent 1941, Ext. Asso. Prof.; BS USU, MS Iowa State U, Graduate work U of Maryland.

HAINES, CHARLES W. (1949) Asst. Prof. Industrial, Technical Education; BS 1948, MS 1953 USU.

HALL, JAY M. (1956) County Agricultural Agent; Point IV Iran 1951, Ext. Asst. Prof.; BS 1947 USU.


HAMMOND, ROBERT G. (1956) Asst. Prof. Mathematics; BS 1948, MS 1952 USU.


HANSEN, ARLEN L. (1957) Instr. Photography; BS 1952, MS 1958 USU. Graduate work USU.

HANSEN, BASIL C. (1954) Asso. Prof. Education; BA, MA 1933 BYU; EdD Stanford U. Graduate study U of Idaho, U of U, Columbia U.

HANSEN, BESSIE M. (1943) County Home Agent, Ext. Asst. Prof.; BS 1929 USU.

HANSEN, BURRELL F. (1948) Chairman Radio, Television, Coordinator Broadcasting; Asso. Prof. Speech; BS 1940 USU, MS 1942 Purdue U, PhD 1953 U of Minn. Certificate Stanford Television Institute.

HANSEN, VAUGHAN E. (1949) Prof. Civil-Irrigation Engineering; Director Engineering Experiment Station. BS 1943, MS 1947 USU; PhD 1949 State U of Iowa.

HARDER, VIRGINIA H. (1956) Asst. Prof., Head, Dept. Home Economics Education; BS 1934 BYU, MS 1956 Iowa State C.

HARDY, CLYDE T. (1950) Asso. Prof. Geology. BA 1948, MS 1948; PhD 1949 Ohio State U.

HARMON, M. JUDD (1951) Asso. Prof. Political Science, History; BS 1948 USU, MS 1950, PhD 1953 U of Wisc. Author The New Deal; A Revolution Consummated.

HARRIS, LORIN E. (1945) Prof. Animal Husbandry; BS 1937 USU, MS 1938, PhD 1940 U of Ill.

HARRISON, GLADYS L. (1936) Editor Agricultural Experiment Station; Asso. Prof. AB 1922 BYU, Certificate Librarianship 1936 U of Calif., Graduate work USU, BYU, Iowa State C.

HASLEM, DEAN W. (1950) Manager USU Bookstore; BS 1949 BYU, MS 1957 USU.


HATCH, LAPERLE S. (1944) Instr. Library Science; Cataloging Librarian BYU 1911, Normal Degree in Elementary Education. Eligible for Life Teaching certificate in 1914, Graduate study USU.


HAWS, B. AUSTIN (1957) Asso. Prof. Entomology; BS 1948, MS 1949 USU, PhD 1955 Iowa State C.

HAWS, FRANK W. (1953) Research Asso. Dept. Civil-Irrigation Engineering; BS 1946 USU. Graduate work USU.


HENDRICKS, KING (1935) Prof., Head, Dept. English, Journalism; MA 1928, PhD 1941 Stanford U; Graduate work U of Berlin.


HILL, LEON M. (1957) Instr. Industrial, Technical Education; BS 1952 USU.
HIMES, ELLVERT H. (1964) Chairman Graduate Programs in Education; Prof. Education; AA 1929 Kansas City Jr. C. BS 1931 U of U, MA 1937 U of Kansas, PhD 1950 U of U, Co-author Salt Lake City—Your Community.


HOLDREDGE, RUSSELL M. (1959) Asst. Prof. Mechanical Engineering; BS (Bus) 1956, BS (M.E.) 1956, MS 1959 U of Colo.


HUBER, THELMA (1951) Prof., Supervisor, Home Economics Programs; Extension Service; BS 1925, MS 1931 USU, Doctoral work Columbia U, Cornell U.

HUGHES, J. KEITH (1952) County Agricultural Agent, Davis Asst. Agent 1952, Ext. Asst. Prof.; BS 1950 USU.


HURST, CLYDE (1940) Instr. Industrial, Technical Education; General Motors training in hydraulics, controlled coupling, automatic transmissions.


ISRAELSEN, VERNON L. (1947) Prof. Economics; BS 1929 USU, MA 1937 BYU, PhD 1942 U of Wis., Economist Board of Investigation and Research, Washington, D.C.; economist Public Housing Adm., Cleveland, Ohio, Puerto Rico. Special lecturer Economics at Western Reserve U.

JACKSON, ARTHUR D. (1958) Principal Edith Bowen Laboratory School; Asst. Prof. Education; BS 1943 Colo. C, MS 1949 USU, Doctoral work at Stanford U, U of Tex.


JARRETT, VON H. (1952) Asst. Prof. Agricultural Engineering; BS 1948, MS 1954 USU.

JENSEN, CLAYNE R. (1956) Asst. Prof. Physical Education, Recreation; Extension Recreation Specialist; BS 1952, MS 1966 U of U.

JENSEN, JAY O. (1942) Asst. Prof. Physics; BS 1940 USU, Graduate work USU, U of Ore.

JENSEN, LOUIS A. (1946) Extension Agronomy Specialist; Duchesne County Agent 1947, Millard Asst. Agent 1946, Asst. Prof. Agronomy; BS 1939, MS 1960 USU.

JENSEN, NAOMI (1944) County Home Agent, Sanpete County Home Agent 1946, Extension Asst. Prof.; BS 1938 USU, Graduate work USU.

JOHNSON, ELWIN E. (1958) Captain USAP; Asst. Prof. Air Science; BS 1951 Tex. Tech. C.

JOHNSON, THETA (1943) Extension Clothing Specialist, Davis County Agent 1948, Carbon County Home Agent 1944, Asso. Prof.; BS 1938 USU, MA 1953 Columbia U.


KEETCH, RUSSELL R. (1929) Extension Sheep, Wood Specialist; Supervisor County Agents 1958, Sanpete County Agent 1945, Uintah County Agent 1936, Wasatch County Agent 1929; Asso. Prof.; BS USU, MA 1951 Colo. State U.


KIEFER, FRED W., JR. (1955) Asst. Prof. Civil-Irrigation Engineering; BS 1950 USU, MS 1953 Colo. State U.


KNOWLTON, GEORGE F. (1925) Prof. Entomology, Ent. Specialist; BA 1923, MA 1925 USU, PhD 1932 Ohio State U, Postdoctorate work U of Minn.


LARSON, JESSIE (1941) Asso. Prof. Fine Arts; BS 1933 USU, MFA 1948 U of Washington, Seattle; Studied Art Students' League of New York, U of New York, Colorado Springs Fine Arts Center, USU.


LEWIS, DOROTHY B. (1953) Asst. Prof. Family Living, Child Development; BS 1951 U of New Mex., MS 1953 Iowa State U; Certificate of Library Science, 1951 Western Reserve U.


LINDSAY, BEN W. (1958) County Agricultural Agent, Ext. Asst. Prof.; BS 1957, MS 1959 USU.


LINDSTROM, GAELL (1957) Asst. Prof. Fine Arts; BS 1952 U of U, Graduate work Calif. C of Arts and Crafts.

LINFORD, GENE H. (1948) Asst. Prof. Zoology; BS 1933 USU, MS 1935 U of U; Doctoral work U of Calif.

LOGAN, IDA MARIE (1947) Reference Librarian, Asst. Prof.; BS 1938, MS 1956 USU.


LU, KUO HWA (1956) Asso. Prof. Applied Statistics; BS 1945 Central U of China, MS 1948, PhD 1951 U of Minn.; Postdoctorate research fellow U of Minn.


MATTHEWS, DARRELL H. (1948) Asst. Prof. of Animal Husbandry. BS 1948, MS 1958 USU.

MATTHEWS, DOYLE J. (1951) Asst. Prof. of Animal Husbandry. BS 1950, MS 1951 USU. PhD 1959 Kansas State U.

MAUGHAN, J. HOWARD (1955) Asst. to Dean of Agriculture. BS 1916, MS 1924 USU. Graduate work U of Wisc. Director, CSU 1922-1929; Senior Irrigation Economist, USDA, 1934-1951.


MCBRIDE, C. D. (1947) Chair. of Management Institute; Asst. Prof. of Business Administration. BS 1933, MS 1940 USU.


MCGILL, E. C. (1959) Prof. of Business Administration and Secretarial Science; BS 1940, Southwest Missouri State C., MS Oklahoma State U; EdD 1955 NYU; Co-author of Business Principles, Organization and Management, Briefhand, Office Production Typewriting.

MENDINI, ARTHUR H. (1955) Instr. in Physical Education. BS 1962, MS 1959 USU. Graduate work USU.


MERRILL, MILTON R. (1928) Vice President; Prof. and Head, Dept. of History and Political Science. BS 1925 USU, MA 1932, PhD 1951 Columbia U. Dean of Summer School; Dean, College of Business and Social Sciences.

MERRILL, SAMUEL W. (1956) Instr. in Industrial and Technical Education. BS 1942 USU. Graduate work USU.


MEYER, GEORGE A. (1935) Prof. of Languages; Foreign Student Adviser. BA 1916 Wittenberg C. BA 1917 Yale C, STB 1925 General Theological Seminary, PhD 1924 Yale U.


MICKelsen, CHARLES H. (1964) Research Asso. in Dairy Industry. BS 1951 USU, Graduate work USU.

MILLER, ELNA (1928) Ext. Foods and Nutrition Specialist. Prof. BS 1921 USU, MS 1926 Columbia U.


MILLIGAN, CLEVE H. (1945) Prof. and Head, Dept. of Civil and Irrigation Engineering. BS 1932 USU, MS 1933, U of Calif. Ten years professional engineering US Forest Service and US Army Engineer.

MINER, MERHYR L. (1943) Prof. and Head, Dept. of Veterinary Science. BS 1937 USU, DVM 1941 Iowa State C. Postdoctoral work U of Minn.


*MORE, J. REED (1945) Summit County Agricultural Agent. Ext. Asst. Prof. BS 1936 USU. Graduate work at Cornell. Kane County Agent 1945.


*On leave.
MORGAN, FLOYD T. (1934) Asso. Prof. of Fine Arts. BS 1934 USU, MA 1939 State U of Iowa. Doctoral work at State U of Iowa and Stanford U.

MORRIS, A. J. (1931) Prof. and Head, Dept. of Dairy Industry. BS 1928, MS 1930 USU. Doctoral work at U of Wisc.

MORRIS, LAVAIL S. (1939) Prof. and Head, Dept. of Landscape Architecture and Environmental Planning. BS 1923 USU, MS 1925 Mich. State U, MLA 1933 Harvard U.

MORRISON, EARNEST M. (1945) Prof. and Acting Head, Dept. of Agricultural Economics. BS 1937 USU, MS 1939 U of Calif. Doctoral work at U of Ill., No. Carolina State.


MORTENSEN, J. LYNN (1950) Asst. Prof. of English. BS 1949, MS 1950 USU. Graduate work U of U.

MORTIMER, WILLIAM E. (1943) Prof. and Head. Dept. of Industrial and Technical Education. BS 1928 BYU, MS 1942 Ore. State C. EdD 1956 U of Missouri.


MURRAY, BEATRICE E. (1954) Instr. in Elementary Education. BS 1954 USU. Graduate work USU.

MURRAY, EVAN B. (1934) Prof. and Head, Dept. of Economics. BS 1927, MS 1930 USU. Graduate work U of So. Calif., U of Chicago.

MYERS, CHESTER J. (1926) Prof. of Speech. BS 1921 U of U, MA 1923 U of Iowa, PhD 1940 U of So. Calif.


NELSON, DALE O. (1947) Asso. Prof. of Physical Education. BS 1942, MS 1948 USU, PhD 1957 U of So. Calif.

NELSON, GEORGE (1921) Instr. in Physical Education. Special degree, LDS church school.

NELSON, MARY (1946) Asso. Prof. of Mathematics. BA 1933 USU, MS 1938 State U of


NEUBERGER, L. MARK (1952) Dean of Academic Administration, Secretary to the Board of Trustees. Prof. of Business Administration. Executive Assistant to the President 1953-1957. BS 1932, MS 1934 USU. Doctoral work U of Chicago, U of So. Calif., U of Calif. Graduate of Associate and Personnel Management courses of The Adjutant General's School 1947 and 1950, author of Cases in Office and Personnel Management.


NIELSEN, H. M. (1941) Asst. Prof. of Chemistry. BS 1933, MS 1936 USU.

NIELSEN, MARION L. (1936) Prof. and Head, Dept. of Languages. BS 1935 USU, MA 1936, PhD 1945 Stanford U. American-Scandinavian Foundation Fellow, U of Copenhagen, Denmark, 1946-1947, Ford Foundation Fellow, U of Innsbruck, Austria and U of Munich, Germany.

NIELSEN, VENETA L. (1946) Lecturer in English. BS 1940, MS 1950 USU. Study at Columbia U and U of Calif.

NIELSON, REX F. (1949) Asst. Prof. of Agronomy. BS 1947, MS 1949 USU.


NYMAN, ROSS A. (1946) Instr. in Mechanical Engineering. BS 1954 USU. Graduate work USU and Ore. State C.

OGDEN, MARVEN J. (1956) Millard County Agricultural Agent. Ext. Asst. Prof. BS 1940 USU. Graduate work USU.

OGDEN, PHIL REED (1966) Asst. Prof. of Range Management. BS 1952, MS 1956 USU. Doctoral work 1960 Iowa State C.

OLSEN, ALICE (1954) Instr. in Elementary Education. BS 1952 U of U.

OLSEN, DONALD R. (1955) Asst. Prof. of Geology. BS 1958 USU, MS 1951 U of U. Graduate work U of U.

OLSON, ARLAND E. (1954) Research Asso. BS 1951, MS 1953 USU.

OLSON, CHARLES P. (1952) Lecturer in Political Science. BS 1939 USU, JD 1946 Geo. Wash. U.


OLSON, L. ELMER (1955) Asst. Prof. of Chemistry. BS 1941 USU, MS 1947 U of U, PhD 1957 U of Ill.

OTT, J. BEVAN (1959) Asst. Prof. of Chemistry. BS 1955, MS 1956 BYU, PhD 1959 U of Calif.

PATTZ, GEORGE (1946) Instr. in Music in Dept. of Fine Arts.


Parrish, Joseph (1934) Salt Lake County Agricultural Agent. Ext. Assoc. Prof. BS 1933 USU. Juab County Agent 1944, Grand County Agent 1935.


Pedersen, Ivan (1953) Instr. in Elementary Education. BS 1960, MS 1965 USU.


Peterson, Annette D. (1957) Instr. in Business Administration and Secretarial Science. BS 1956 USU.


Pollard, Leonard H. (1939) Prof. and Head, Dept. of Horticulture. BS 1932; MS 1934 USU, PhD 1939 U of Calif.


Preator, Frederick (1937) Prof. and Head, Dept. of Tool Engineering. BS 1935 USU, MS 1947 Wayne U.


Rasmusen, Howard Dale (1957) Instr. in Physical Education. BS 1949, MS 1956 USU.


*Reese, L. Grant (1955) Instr. in English. BS 1955, MS 1966 USU. Graduate work at the U of Wash.


*On leave.
RICE, MOYLE Q. (1937) Prof. of English. BS 1936 USU, MA 1937 U of Nebraska. Doctoral work at U of Chicago, Harvard U. Co-author of Communication Skills (Basic Communications text) and Look on the Land.

RICH, ELLIOT (1956) Asso. Prof. of Civil Engineering. BS 1948 USU, ME 1951 U of U. Graduate work U of U.

RICH, WAYNE R. (1956) Asst. Prof. of Mathematics. BS 1948, MS 1949 USU.


RICKENBACH, RODNEY G. (1945) Millard County Agricultural Agent. Ext. Asso. Prof. BS 1945 USU.

RICHARDSON, STANLEY S. (1950) Prof. and Head, Dept. of Agricultural Education. BS 1925 USU, MS 1938 U of Idaho.

RICKS, JOEL EDWARD (1922) Prof. of History. BA 1912 U of U, MA 1920, PhD 1930 U of Chicago. Postdoctoral work U of Calif. Editor and contributor to The History of a Valley: Cache Valley.

RIETHMANN, VAL ENTINE (1959) Major USAF. BS 1949 USU, MS 1951 USU.


RINGE, DANIEL J. (1959) Major USAF. Asst. Prof. of Air Science.

ROBERTS, NORMAN KEITH (1957) Asso. Prof. of Agricultural Economics. BS 1948, MS 1949 Iowa State C. PhD 1958 U of Kentucky.


ROSE, D. WAYNE (1952) Kane County Agricultural Agent. Ext. Asst. Prof. BS 1952 USU, MS 1959 U of Minn. Salt Lake County Asst. Agent 1952.

ROSKELLEY, R. WELLING (1947) Prof. and Head, Dept. of Sociology. BS, MS 1933 USU, PhD 1938 U of Wisc. Author of Sociology Under Analysis.

ROWLAND, PRISCILLA (1945) Asst. Prof. of Food and Nutrition. BS 1923 USU, MS 1938 Ore. State C., Doctoral work U of U, Ore. State C., Texas State C for Women.


SHARP, HEBER C. (1946) Asso. Prof. of Psychology. BS 1944, MS 1945, PhD 1955 U of U. Associate of American Psychological Assoc.

SHAW, EDITH SMITH (1942) Asso. Prof. of Education. BS 1936 USU, MA 1954 Northwestern U.


SHUPE, J. LEGRANDE (1952) Prof. of Veterinary Science. BS 1948 USU, DVM 1952 Cornell U. Postdoctoral work in pathology at Armed Forces Institute of Pathology.

SIGLER, WILLIAM F. (1947) Prof. and Head, Dept. of Wildlife Management. BS 1940, MS 1941, PhD 1947 Iowa State C. Author of Wildlife Law Enforcement.


SLAUGH, OWEN (1946) Asso. Prof. of Industrial and Technical Education. BS 1952, MS 1957 USU.

SMITH, ALBERT B. (1952) Asst. Prof. in Engineering Drawing. BS 1951.


SMITH, HUBERT W. (1947) Prof. of English. AB 1928 Park C, MS 1933 Northwestern U, PhD 1949 U of Penn. Co-author of Communication Skill (Basic Communications text.)

SMITH, R. L. (1955) Asso. Prof. of Agronomy. BS 1951, MS 1952 USU, PhD 1955 UCLA.

SMITH, WINSLOW WHITNEY (1946) Prof. and Head, Dept. of Bacteriology and Public Health. BA 1933, MA 1936 U of U, PhD 1939 U of Wis. Author of movie, Grams Stain.

SMITH, WILLIAM LLOYD (1954) Duchesne County Agricultural Agent. Ext. Asst. Prof. BS 1953 Ricks C, MS 1956 USU.


*STEFEN, HYRUM (1937) Asso. Prof. of Animal Husbandry. BS 1937 USU, MS 1950 U of Ill.

*STENQUIST, LEE B. (1954) Internal Auditor. BS 1947 BYU.

STENQUIST, NORRIS J. (1958) Roosevelt County Agricultural Agent. Ext. Asst. Prof. BS 1957, graduate work USU.

STEVENS, KENNETH R. (1931) Prof. of Bacteriology and Public Health. BS 1927 BYU, MS 1929, PhD 1932 Rutgers U. Postdoctoral work U of Ill. Author of Elementary Bacteriology Laboratory Manual.


STEVENSON, EVAN N. (1955) Manager, Student Union; Coordinator, Student Activities. BS 1951 BYU.

STEWARD, J. J. (1947) Editor of University Publications, Asst. Prof. of English and Journalism. BS 1949 USU, MS 1957 U of Ore. UPI Correspondent; Deseret News and Telegram Farm Editor and Feature Writer, Herald Journal City Editor, USU Extension Service Editor, Head of USU News Bureau, Author of three books.


STODDARD, GEORGE E. (1952) Prof. of Dairy Industry. BS 1943 U of Idaho, MS 1948, PhD 1950 U of Wis.


STOKER, GOLDEN L. (1945) Asso. Prof. of Agronomy. BS 1932, MS 1933 USU.


STOKES, L. DARRELL (1941) Davis County Agricultural Agent. Ext. Asso. Prof. BS 1938 USU. Wasatch County Agent 1948, Emery County Agent 1944, Salt Lake County Asst. Agent 1941.


STONE, DAVID R. (1946) Prof. of Psychology. BA, MA 1943 U of U, PhD 1946 U of Chicago.


*On leave.
STRONG, DOUGLAS C. (1953) Asst. Prof. of Agricultural Economics. BS 1943, MS 1953 USU. Graduate study at Mich. State U.

SUMMERS, LOWELL P. (1946) Asso. Prof. of Industrial and Technical Education. BS 1940, MS 1956 USU. Civil Aeronautics Adm. licensed instructor and authorized inspector.

SWENSON, DAN H. (1948) Asst. Prof. of Industrial and Technical Education. BS 1940, MS 1949 USU.


TAYLOR, STERLING A. (1949) Prof. of Agronomy. BS 1941 USU, PhD 1949 Cornell U.

TAYLOR, THOMAS A. (1951) Instr. in Elementary Education. BS 1939, Teaching certificate 1941, MS 1954 USU. Taught high school science and coached at Payette Idaho 1941-1943, taught high school science and coached at Woodland, Wash., 1943-1946.


TEZAK, WILLIAM V. (1955) Asst. Prof. of Business Administration and Secretarial Science. AB 1947 Western State C of Colo, MBA 1948 U of Denver. Doctoral work Indiana U.


THOMAS, JAMES ALAN (1952) Asst. Prof. of Veterinary Science. DVM 1946 Colo. State U.


TINGEY, DELMAR CLIVE (1924) Prof. of Agronomy. BS 1922, MS 1924 USU. Doctoral work U of Minn.

TINGEY, WILLIS A. (1946) Asst. Prof. of Civil and Irrigation Engineering. BS 1928 USU, Graduate work USU, U of Ill.


TIPPETTS, TWAIN C. (1956) Asso. Prof. and Head, Dept. of Fine Arts. BS 1939, MA 1941 BYU, doctoral work UCLA.

TOCHER, ARLEN CRAIG (1959) Instr. in Landscape Architecture & Environmental Planning. BS 1957 USU.

TOCHER, STEWART ROSS (1952) Asso. Prof. of Forest Management. Student Personnel Officer for College of Forest, Range and Wildlife Management. BS 1949, MS 1950 U of Calif.


TURNER, LEWIS M. (1943) Dean, College of Forest, Range, and Wildlife Management. Prof. of Forest Management. BS 1923, MS 1925 U of Ill., PhD 1931 U of Chicago.

*On leave.
322 Faculty


TYLER, EMILY W. (1958) Utah County Home Demonstration Agent, Ext. Asst. Prof. BS 1991 BYU.


VAN EPPS, GORDON A. (1952) Asst. Prof. of Agronomy. BS 1942, MS 1948 USU.

VAN OR sen, HARRIS O. (1946) Prof. of Chemistry. BS 1938 USU, MS 1942 State C of Wash., PhD 1951 Mass. Institute of Technology, postdoctoral work U of U.

VERMILLION, UNA (1937) Prof. and Head, Dept. of Food and Nutrition. BA 1920 U of Kansas, MA 1934 U of Chicago.

WADSWORTH, HAROLD M. (1946) Superintendent of Plant Operations and Maintenance. BS 1927 USU, graduate work USU, U of Wyo.


WALKER, RUDGER H. (1938) Dean, College of Agriculture; Prof. of Agriculture. BS 1928 BYU, MS 1925, PhD 1927 Iowa State C. Member, board of trustees, American U of Beirut.

WALLIS, CARL R. (1957) Asst. Prof. of Engineering Drawing. BS 1949, MS 1957 USU.

WAMSLEY, HELEN J. (1946) Rich County Home Demonstration Agent. Ext. Asst. Prof. BS 1957 USU.

WASSERMANN, IRVING (1955) Asso. Prof. Fine Arts. ML at U of Cracov, Poland, studied with Anton Webern and Ed. Steurmman in Vienna, Austria.


WENNBERGREN, E. BOYD (1959) Asst. Prof. of Agricultural Economics. BS 1951, MS 1956 USU, PhD 1959 Penn. State U.


WIGGINS, JANET FRANCINE (1956) Instr. in Elementary Education. BS 1955 USU.

WILCOX, ETHELWYN R. (1943) Prof. of Food and Nutrition. BS 1931, MS 1937, PhD 1942 Iowa State C.

WILLEY, LYNN R. (1946) Asst. Prof. of Industrial and Technical Education, Trade certificate 1939, BS 1950, MS 1953 USU.

WILLIAMS, J. STEWART (1935) Dean, School of Graduate Studies; Prof. and Head, Dept. of Geology. BS 1923 BYU, MS 1927 Columbia U, PhD 1928 Geo. Wash U. Postdoctoral work Yale U.

WILLIAMSON, DAVID O. (1946) Res. Asso. in Animal Husbandry. BS 1936 USU.

WILSON, LEMOYNE (1937) Asso. Prof. of Agronomy, BS 1927, MS 1932 USU.

WISE, CECIL E. (1958) Captain, Army Corps of Engineers; Asst. Prof. of Military Science and Tactics. BS 1950 Texas Tech. C.
Emeritus Faculty

Harris, Franklin Stewart, BS, PhD, LL.D, DSc
President Emeritus

Agren, Ellen, BS, MA
Professor Emeritus, Extension Service

Barrows, Effie S., BS
Professor Emeritus, Extension Service

Boswell, Stephen R., BS
Professor Emeritus, Extension Service

Bowen, Edith, BS, MS
Professor Emeritus of Education

Brown, Almeda P., BS, MA
Professor Emeritus of Home Economics

Caine, George B., BS, MA
Professor Emeritus of Dairy Industry

Christensen, A. L., BS, MS
Professor Emeritus, Extension Service

Dalley, Parley, BS, MS
Professor Emeritus of Physical Science

Dancy, Charlotte E., RN
Professor Emeritus of Physiology

Evans, R. J., BS, PhD
Professor Emeritus of Agronomy

Fletcher, Calvin, BPd
Professor Emeritus of Art

Gardner, Willard, BS, MS, PhD
Professor Emeritus of Physics

Geddes, Joseph A., AB, AM, PhD
Professor Emeritus of Sociology

Hansen, Reuben, BS
Professor Emeritus, Extension Service

Humphreys, L. R., BS
Professor Emeritus of Agricultural Education

Israelsen, Orson W., BS, MS, PhD
Professor Emeritus of Irrigation and Drainage Engineering

Jennings, D. S., BS, PhD
Professor Emeritus of Agronomy

Jensen, George C., AB, MA
Professor Emeritus of Modern Languages

Lund, Nettie R., BS
Professor Emeritus, Extension Service

Maeser, Sherwin, AB, PhD
Professor Emeritus of Chemistry

Manning, Wm. H., AB
Professor Emeritus of Music

Martineau, V. L., BS
Professor Emeritus, Extension Service

McClellan, Charles E., AB, MA
Professor Emeritus of Education

Nichols, Delore, BS
Professor Emeritus, Extension Service

Pedersen, N. Alvin, AB, MA, PhD
Dean Emeritus, University College

Pittman, Don W., BS, MS
Professor Emeritus of Agronomy

Rich, Lyman H., BS, MS
Professor Emeritus of Dairy Industry

Richards, B. L., BS, MS, PhD
Professor Emeritus, Botany and Plant Pathology

Sharp, David, Jr., BS
Professor Emeritus, Extension Service

Smith, Albert E., BS
Professor Emeritus, Extension Service

Sorensen, C. J., BS, MS
Professor Emeritus of Entomology

Stanford, J. Sedley, BS, PhD
Professor Emeritus of Zoology and Entomology

Stewart, R. H., BS
Professor Emeritus, Extension Service

Swenson, D. A., BS
Professor Emeritus of Woodwork and Building Construction
324 Faculty

Thomas, W. P., BS, MS, PhD
Professor Emeritus, Agricultural Economics

Tingey, V. H., BS, MS
Professor Emeritus of Mathematics

Vickers, Wallace J., BS, MS, PhD
Professor Emeritus of English

Wrigley, R. L. BS
Professor Emeritus, Extension Service

College of Southern Utah Faculty 1960-61

Braithwaite, Royden C., BS, PhD
Director

Adams, Fred, BA, MA
Instructor, English and Speech

Applegate, George B.
Bookkeeper

Ashcroft, Theron, BS
Professor of Physics and Engineering
Co-Chairman, Division of Engineering and
Physical Science

Barrus, George, BS
Assistant Professor, Journalism
Chairman, Public Information and Services

Bastow, Mary, BS
Professor Emeritus of Art

Blue, Donald M., BS, MS
Assistant Professor, Physical Science

Beal, Robert McKee, Major
USAF, Associate Professor, Air Science

Bushnell, Van
Cashier
Director, Band

Carpenter, Ada, BS
Assistant Professor, Family Life
Chairman, Division of Family Life

Challis, A. Thomas, BA, MS
Chairman of Library Services

Clark, Gwyn R., BS, MS
Associate Professor, Elementary Education
and English Supervisor, Teacher Training

Coward, McRay, BS, EdM
Assistant Professor, Business and Education Coordinator of Housing

Cooley, Hazen, BS, MBA
Professor, Business
Secretary and Treasurer

Cooper, Laurence, BS, MS
Assistant Professor, Chemistry and Physical Science

Dalley, Parley, BS, MS, ScD
Professor Emeritus, Physical Sciences

Doney, Ronald, BS, MS
Instructor, Biology

Davis, Victor
Instructor, Auto Mechanics

Duncan, Audrey
Head, Stenographic Bureau
Secretary to the Director

Dunklin, Hubert, T/Sgt.
USAF, Administrative Assistant

Fillerup, Joseph M., BS, MA, EdD
Associate Professor, Education
Chairman, Division of Education and
Summer Session

Gillies, Richard E., BS, MS
Assistant Professor, Social Science
Coordinator of Student Organizations and Activities

Grimshaw, Arlen
Assistant Secretary
Manager, Students' Bookstore

Halversen, Roy L., BS
Professor, Music and Education
Chairman, Music Department

Hansen, Gerald, BS, MS
Assistant Professor, Political Science

Hardy, Eugene, BS
Associate Professor, Industrial Education

Hatch, Conrad V., BS, MS
Associate Professor, Physical Science and Chemistry
Co-Chairman, Division of Engineering and Physical Science

Hunter, Antone, BA
Instructor, Interior Design

Johnson, Blaine, BS, MA, EdD
Associate Professor, Music and Education
Coordinator of Military Affairs

Jones, Eulalia B., BA
Assistant Professor, Library Science

Judd, Harli, BS
Instructor, Engineering and Mathematics

Kupfer, Vern K., BS, MS
Associate Professor, Psychology and Social Science
Coordinator, Health and Counseling Service

LeBaron, George L., BS, MS
Associate Professor, Physics and Physical Science

Magleby, V. R., BS, MS
Associate Professor, Agriculture and Biology
Manning, William H., AB
Professor Emeritus of Music

Matthews, Darrel H., BS, MS
Assistant Professor, Animal Husbandry

Maxfield, Flora Lee, BS
Instructor, Family Life

McAllister, LeRay, BA, MS
Assistant Professor, Business

Myers, Kent, BA, EdD
Assistant Professor, English and Speech

Ogden, Phil R., BS, MS
Assistant Professor, Range Management

Osborne, Bruce H., BS
Assistant Professor, Physical Education

Petty, Cleo M., BS, MS
Assistant Professor, Physical Education

Plummer, J. H., BA, MS
Associate Professor, English
Chairman, Division of Humanities, English
and Fine Arts
Dean of Instruction

Robb, Ward, BS
Registrar
Veterans’ Coordinator

Rowley, Richard M., BS, MA
Associate Professor, English and Speech

Sargent, David L., BS, MS
Professor Emeritus of Biology

Schmutz, D. Clarence, BA, MA
Associate Professor, Agricultural Economics
Chairman, Division of Agriculture

Shirts, Morris, BA, MS, EdD
Associate Professor, Education

Southwick, Elaine C., BA
Instructor, English and Speech

Stephenson, A. W., BS, MBA
Associate Professor, Business
Chairman, Division of Business and Social Science
Coordinator of Student Aid and Employment

Stout, Shirley Gardner, BS
Instructor, Secretarial Science

Vorkink, Paul, BA, MA
Assistant Professor, English and Speech

Wahlquist, A. Glenn, BS, MS
Associate Professor, Agronomy and Biology
Chairman, Division of Biological Science

Warby, Paul, BS
Instructor, Auto Mechanics

Weaver, Max D., BS, MA
Associate Professor in Art

Whetten, Lois LaVeve, BS
Assistant Professor, Physical Education

Woolf, Eugene T., BA, MS
Assistant Professor, English and Speech

Other Members of Staff

Cox, R. Reid
Chairman of Plant Operations

Draper, Carol
Nurse, Health and Counseling Center

Evans, Gayle, BS
Superintendent of Valley Farm

Grant, Sheldon
Superintendent of Grounds

Jackson, Douglas
Assistant Superintendent, Buildings and Maintenance

Matheson, Edward G.
Superintendent of Heat Plant

Orton, Twenty
Herdsman, Experimental Sheep

Peterson, Myrtis
Supervisor, Women’s Residence Hall

Rigby, Eldro
Assistant, Buildings

Roberts, Joseph
Superintendent of Buildings

Smith, T. Gordon
Valley Farm Assistant

Stratton, H. Arwin
Assistant, Buildings

Whitcomb, Claire
Assistant Registrar

Associated Instructors

The elementary teachers of Iron County School District serve as critic teachers in the Division of Education.

Dahl, Paul E.
Director, LDS Institute of Religion

Day, Frank
Associate Director, LDS Institute of Religion

Johnson, Mrs. Blaine
Special Instructor in Music

Jones, Bernella
Special Instructor in Music

Thorley, Max J.
Special Instructor in Music
Snow College Faculty

Holm, Floyd S., BS, MS
Director
Associate Professor of Education

Allred, Fred L., BS, MEd
Assistant Professor of English

Armstrong, Milton G., BS, MS
Assistant Professor of Chemistry

Beacham, Garth, BS, MS
Assistant Professor of Education
Chairman, Division of Education and Social Science

Bradley, Merritt E., BS, MS
Assistant Professor of Building Trades
Chairman, Division of Industrial and Vocational Education

Christensen, H. Reed, BS, MS, PhD
Professor of Mathematics and Physics
Chairman, Division of Physical Sciences and Mathematics

Chugz, David, MS
Assistant Professor of Music

Clark, Winnie W., BS
Women’s Counselor
Instructor in Women’s Physical Education

Crane, Joseph W., BA, MA
Associate Professor of Speech
Chairman, Division of Humanities

Dean, H. A., BS, MS
Professor Emeritus of Music

Findlay, Ross P., BS, MS
Dean of Students, Registrar
Assistant Professor of Social Sciences

Gray, A. Russell, BS, MS
Associate Professor of Social Science and Modern Languages

*Hansen, Atfon, BS, MS
Assistant Professor of Biology
Chairman, Division of Agriculture and Life Science

Jennings, Bruce, BA, MA
Assistant Professor of English

Jensen, Halbert, MBA
Instructor of Business Administration

Jensen, LaVar
Piano Instructor

Mangelson, Farrin L., BS, MS
Associate Professor of Chemistry

Moore, Blain, AB, MA
Assistant Professor of Biology

Olsen, Ruth, BS
Librarian
Instructor in Library Science

Peterson, Rulon, BS
Instructor of Mathematics

Phillips, Lucy A., AB, MA
Professor Emeritus of English

Ray, Nellie, BS, MA
Associate Professor of Secretarial Science
Acting Chairman, Division of Business

Reeves, Kay, BS, MS
Instructor in Home and Family Living

Ryan, Duane, AB, MA
Instructor in Speech

Stoddard, Robert, BS
Instructor in Physical Education and Agriculture

Stout, Clayton
Instructor in Automotive Technology

Takasaki, Fred Y., BA, MA
Instructor of Art

Thompson, Lee R., BS
Treasurer
Assistant Professor of Physical Education

Van Epps, Gordon, MS
Supervisor of the Experiment Farm
Assistant Professor of Agronomy

Woodbury, Darwin, BS
Instructor of Physical Education

Other Members of Staff

Stout, Fonda
Manager of Bookstore

Olsen, Goldie
Manager of Cafeteria

Peterson, Hillmer
Supt. Buildings and Grounds

Rasmussen, Lois
Secretary to Directors

Bailey, Fred
Custodian

Alder, Ivan
Maintenance Supervisor

Shuffler, Betty
Clerk-stenographer

Stewart, Larry
Herdman

Associated Instructors

Craner, Max, BS, MEd
Director of LDS Institute of Religion

McQuarrie, Harlow B., BS, MS, MD
Lecturer in Public Health

*On leave 1959-60.
Federal Collaborators at USU

Annand, Robert N., AB, MS
Agricultural Research Service

Bendixen, Warren E., BS
Agricultural Research Service

Benson, Norman G., BS, MA, PhD
U. S. Fish and Wildlife Service
Fishery Research

Binns, Wayne, MS, DVM
Agricultural Research Service

Bohart, George E., BS, MS, PhD
Agricultural Research Service

Buck, William B., BS, DVM
Agricultural Research Service

Bulkeley, Ross V., BS, MS
U. S. Fish and Wildlife Service
Fishery Research

Carlson, John Wilford, BS, MS, PhD
Agricultural Research Service

Cary, John W., BS, MS
Agricultural Research Service

Cronin, Eugene Hyrum, BS, MS
Agricultural Research Service

Dewey, Douglas R., BS, MS, PhD
Agricultural Research Service

Dorst, Howard Earl, AB, AM
Agricultural Research Service

Erickson, Austin J., BS
Agricultural Research Service

Fitzgerald, Paul Ray, BS, MS
Agricultural Research Service

Haddock, Jay Lamar, BS, MS, PhD
Agricultural Research Service

Hawthorn, Leslie Rushton, BS, MS
Agricultural Research Service

Hull, Alvin C., Jr., BS, MS, PhD
Agricultural Research Service

James, Lynn F., BS, MS
Agricultural Research Service

Jaycox, Elbert R., BS, MS, PhD
Agricultural Research Service

Johnson, A. Earl, BS, MS
Agricultural Research Service

Lauritzen, Cyril Walker, BS, MS, PhD
Agricultural Research Service

Levin, Marshall David, AB, MS, PhD
Agricultural Research Service

Leininger, Lester N., BS, MS, PhD
Agricultural Research Service

Low, Jessop Budge, BS, MS, PhD
Wildlife Research Unit

Martin, Mark W., BS, MS, PhD
Agricultural Research Service

Mielke, James Leroy, BSF, MS, PhD
Forest Service

Nye, William Preston, BS, MS
Agricultural Research Service

Pedersen, Marion Walter, BS, MS, PhD
Agricultural Research Service

Stewart, Clyde Everett, BS, MS, PhD
Agricultural Research Service

Stuart, Darrel M., BS, MS
Agricultural Research Service

Thorne, James Parry, BS, MS
Soil Conservation Service

Thorley, Heber F., BS, MS
Agricultural Research Service

Urie, Lee, BS
Agricultural Research Service

Wadley, Bryce Nephi, BS, MS, PhD
Agricultural Research Service

Willardson, Lyman S., BS, MS
Agricultural Research Service

Williams, Coburn, BS, MS, PhD
Agricultural Research Service

Woodward, Rollo William, BS, MS, PhD
Agricultural Research Service

Zimmer, John M., BS, MS
Agricultural Research Service

When all else is lost the future still remains.
Index

Academic Colleges and Departments, 3, 4
Accreditation, University, 9
Accounting, 101
Activities, Student, 273
Actor, 137
Administration,
   Business, Department of, 100
   Officers of University, 5
Admission to University, 12
Adult Education Services, 250
Advanced Degrees, 237
Adviser, 13
Aeronautical Technology, 188
Agricultural
   Business, 71
   Chemist, 35, 69
   Economics, Department of, 73
   Education, Department of, 125
   Engineering, 167
   Experiment Station, 281
   Extension Agent, 69
   Inspector, 69
   Research Worker, 69
   Sciences, 69
   Agriculture
      College of, 67
      Curricula in, 71
      General, 71
      Two-year Program in, 72
Agronomy, Department of, 76
Aircraft Engine Mechanic, 186
Air Force ROTC, 227
Air Science, Department of, 227
Alumni Association, 297
American Studies, 39
Animal Husbandry, Department of, 80
Animal Nutritionist, 80
Applied Statistics, Department of, 83
Army ROTC, 224
Army-Air Force Courses and Activities, 222
Art, 139
Artist, Commercial, 139
Arts
   Fine, Department of, 133
   Industrial, 179
   Language, 18
   Music, 133
   Theatre, 187
   Visual, 139
Assemblies, 274
Assistantships, 242
Associated
   Students, 274
   Women Students, 275
Athletics, 143, 273
Auditor, 101
Automotive Technology, 188
Award, Honors, Scholarships, 262, 267
Bachelor of Science Degree, 22
Bacteriology and Public Health, Department of, 32
Band
   ROTC, 136, 223
   University, 133, 136
Banking Expert, 102
Basic Communication, 18, 41
Basketball Games, Schedule of, 6
Biochemistry and Nutrition, Curriculum in, 241
Biology, 29
Blue Book, Student Handbook, 274
Board of Trustees, 5
Boards and Councils, Student, 274
Botany and Plant Pathology, Department of, 84
Branch Colleges, 253
Building Contractor, 102
Buildings, Campus, 6
Bureau of Educational Research, 287
Business,
   Administration and Secretarial Science, Department of, 100
   Education, 104
   Management, 102
   Social Sciences, College of, 97
Buzzer, Yearbook, 274
Cafeteria (see Food Services)
Calendar of
   Campus Events, 2
   Conferences, Field Days, Shortcourse, Etc., 283, 292
Campus
   Map, Following Page 6
   Organizations, 275
   Photographs, Following Page 6
Carpenter, 178
Cattle Breeder, 80
Certificates
   of Completion, 30, 31
   Terminal, 21
Chansonettes, 275
Chemistry, Department of, 35
Child Development, 196
Choir, 136
Chorus, 136
City
   Manager, 97
   Planner, 46, 178
Civics teacher, 112, 126
Civil and Irrigation Engineering, Department of, 161
Class Standing, 13
Clinic, Speech, 272
Clinical Technology, 34
Clothing and Textiles, Department of, 194
Collaborators, 327
Colleges
Agriculture, 67
Business and Social Sciences, 97
Education, 121
Engineering, 158
Family Life, 191
Forest, Range and Wildlife Management, 205
Snow, 256
Southern Utah, 255
University, 27
Commercial
Artist, 139
Teacher, 106, 126
Commissions, Army and Air Force, 221
Committees,
Faculty, 10
Student, 274
Communications
Basic, 18, 41
Mass, 43, 293
Completion Certificates, 21
Conferences
and Institutes, 250
Conventions, Field Days, Shortcourses, Calendar of, 283, 292
Contents, Table of, 3
Cooperative Extension Service, 289
Correspondence
Classes, 250
To USU, Inside Back Cover
Counseling Services, 197, 270
Costs, 24
Credits
By Examination, 17
Explanation of, 13
Crops, 77
Crop Science, 77
Curriculum in
Family Life and Secretarial or Clerical Practice, 197
General Education, 29
Liberal Studies, 30
Library Science, 150
Nutrition and Biochemistry, 241
Dairy
Industry, Department of, 86
Laboratory Technician, 87
Manufacturing, 87
Production, 87
Dances, 274
Debate and Public Speaking, 274
Degrees
Bachelor of Science, 22
Civil Engineer, 239
Doctor of Education, 239
Doctor of Philosophy, 240
Irrigation Engineer, 239
Master of Business Administration, 238
Master of Education, 238
Master of Forestry, 238
Master of Industrial Education, 239
Master of Science, 237
Dentist (predental training), 65
Departments, List of, 4
Development
Fund, 296
University, 293
Diesel Technology, 188
Directory, Student, 274
Division of
Military Science and Tactics and Air Science, 219
Off-Campus Education, 247
Research, 279
Doctor of
Education Degree, 239
Philosophy Degree, 240
Dormitories (see Housing), 259
Drainage Engineer, 161
Drama (see Theatre Arts), 137
Director, 137
Drawing, Engineering and Mechanical, 172
Economics,
Department of, 110
Agricultural, Department of, 73
Economist, Agricultural, 73
Editor, 43
Education Administration, 132
Adult, 250
Agricultural, Department of, 125
Business, 104
College of, 121
Department of, 126
Elementary, 127
General, 29
Homemaking, 291
Industrial and Technical, Department of, 178
Off-Campus, 247
Secondary, 128
Technical, 184
Vocational (see Agricultural, Industrial and/or Homemaking)
Educational Research Bureau, 287
Electrical Engineering, Department of, 169
Emeritus Faculty, 323
Employment, 269
Engineering,
Aeronautical, 186
Agricultural, 167
Chemical, 172
Civil and Irrigation, Department of, 161
College of, 158
Drawing, 172
Drainage, 161
Electrical, Department of, 161
Experiment Station, 284
Irrigation, 161
Mechanical, Department of, 172
Tool, Department of, 176
English and Journalism, Department of, 39
332 USU — Index

Incomplete Work, 15

Industrial and Technical Education, Department of, 178
Arts Education, 178
Management, 185
Technology, 185

Information Services and University Development, 293

Institute, LDS, 259
Institutes, and Conferences, 250
Interior Decorator, 139, 192
Instrumental Music, 134
Intercollegiate Athletics, 278
Intramural Sports, 274
Irrigation Engineering, 161

Jobs, 269

Journalism, 43
Photographic, 44
Juniper, 274

KVSC, Campus Radio Station, 274

Laboratory Technician, 34
Landscape Architecture and Environmental Planning, Department of, 46
Languages, 48
Late Registration, 14
Latin, 50
Lawyer (Pre-Law Training), 115
LDS Institute, 259
Lecture Series, University, 250
Liberal Studies, 30
Libraries, 26
Library Science, 150
Livestock Producer, 80
Loan Funds, 268
Low Scholarship and Probation, 16
Lower Division Requirements, 18
Lyceums, 274

Machine Shop Technician, 172
Maestrosingers, 136
Magazine, Scribble, 274
Maintenance Mechanic, 172
Major Subjects, 20
Management
Business, 102
Industrial, 103
Map, Campus, Following Page 6
Marketing, 102
Marriage Counseling Service, 197
Mass Communication Media
Courses in, 43
University use of, 293

Master of
Business Administration, 238
Education Degree, 238
Forestry Degree, 238
Industrial Education Degree, 239
Science Degree, 237

Mathematical Statistics, 54
Mathematics, Department of, 53
Mechanical
Drawing, 172
Engineering, Department of, 172
Medical Technology, 54
Meistersingers, 275
Merchandising, 102
Metal Work, 140, 181, 183
Microbiologist, 32
Microfilming Thesis, 236
Military Science and Tactics, Department of, 224
Mineralogist, 45
Minor Subjects, 20
Modern Languages, 48
Music, 133
Musicals, 274
Newspaper, Student Life, 174
Non-Resident Fee, 24
Numbering System, Explanation of, 11
Nursery School, 196
Nursing, 66
Nutrition and Biochemistry, Inter-Departmental Curriculum in, 241
Objectives of University, 7
Off-Campus Education, Division of, 247
Officers of Administration, 5
Orchestra, 136, 274
Orientation, 272

Part-time Employment, 269
Pershing Rifles, 222
Philosophical Literature, 51
Philosophy, 51
Photographic Journalism, 44
Photographs of Campus, Following Page 6
Photography, 44
Physical Education, 143
Science, 29

Physics, Department of, 55
Physiology, 64
Plant Pathology, 84
Political Science, 114
Portuguese, 49
Poultry Husbandry, Department of, 93
Pre-
dentistry, 65
law, 115
medics, 66
veterinary, 94
Private Instruction
in Music, 137
in Speech, 59
Probation, 16
Program Bureau, 296
Psychology, Department of, 151
Index 333

Publications
Student, 274
University, 295
Public Health, 32
Quarter, Academic, 11, 13

Radio
Courses (see Electrical Engineering, Journalism, Speech)
Station, KVSC, 274
Range Management, Department of, 206
Recreation, 143
Registration
and Credits, 13
Change of, 14
Fees, 24
General, 29
Late, 14
Maximum, 15
Minimum, 15
Normal, 15
Religion, 259
Requirements,
Entrance, 12
Graduation, 21
Group, 18
Lower Division, 18
Upper Division, 20
Research
Bureau of Educational, 287
Division of University, 279
Programs in, 278
Reserve Officers Training Corps (ROTC), 207
Retail Merchandiser, 102
Rocky Mountain Fisheries Investigation, 288
ROTC Band, 136, 223
Russian, 49
Sanitary Engineer, 32, 158
Saw Mill Operator, 209
Schedule Bulletins, 11
Scholarship, 16
Scholarships, Awards, Honors, Assistantships, Grants-in-Aid, 262, 267
School
of Graduate Studies, 233
Principal, 129
Teacher, 126
Summer, 245
Scribble, Magazine, 274
Secondary Education, 128
Secretarial
or Clerical Practice and Family Life, Combination Major in, 107
Science, 106
Senate, Student, 275
Services
Adult Education, 230
Extension, 289
Health, 271
Information, 293
Student, 259
Short Courses, Calendar of, 292
Snow College, 256
Social
Science, 29, 116
Sciences, College of Business and, 97
Work, 118
Sociology and Social Work, Department of, 116
Soil
Conservationist, 77
Science, 78
Sororities, 275
Southern Utah, College of, 255
Spanish, 51
Special Fees, 24
Speech
Clinic, 272
Correctionist, 58
Department of, 58
Teacher, 58
Therapist, 58
Sponsor Corps, 222
Sports, 143, 273
State Extension Leader, 289
Station
Agricultural Experiment, 281
Engineering Experiment, 284
Statistics
Applied, 83
Mathematical, 54
Stenographer, 100
Structural Engineer, 158
Student
Activities, 273
Boards and Councils, 274
Directory, 274
Employment, 269
Government, 274
Handbook, Blue Book, 274
Health Service, 271
Housing, 259
Loans, 268
Magazine, Scribble, 274
Newspaper, Student Life, 274
Organizations, 275
Publications, 274
Radio Station, KVSC, 274
Services and Activities, 259, 273
Union Building, 274
Union Board, 274
Yearbook, Buzzer, 274
Studies, Liberal, 30
Study
Home, 250
Tours, 249
Summer Camp
Forestry, 208
ROTC, 225
Summer School, 245
Surveyor, 239
Symbols Used, Explanation of, 11
### 334 Index

| Table of Contents, 3 |
| Teacher Certification, 124 |
| Education, 126 |
| Placement Service, 123 |
| Teaching Assistantships, 242 |
| Technical Education, Programs in, 184 |
| Technology, Aeronautical, 186 |
| Automotive, 188 |
| Diesel, 188 |
| Industrial, Programs in, 185 |
| Welding, 189 |
| Terminal Certificate, 21 |
| Textile Demonstrators, 194 |
| Textiles, Clothing and, Department of, 194 |
| Thesis, 236 |
| Theatre Arts, 137 |
| Theatricals, 274 |
| Tool Engineering, Department of, 176 |
| Tours, Travel Study, 249 |
| Trade and Industrial Education, 178 |
| Transfer Students, 13 |
| Travel Study-Tours, 249 |
| Trustees, Board of, 5 |
| Tuition, 24 |

| Union Board, 274 |
| Building, Student, 274 |

| University Board of Trustees, 5 |
| Collaborators, 327 |
| College, 27 |
| Departments of Instruction, List of, 4 Development, 293 |
| Faculty, 307 |

| General Information, 7 |
| Lecture Series, 250 |
| Library, 26 |
| Officers, 5 |
| Press, 295 |
| Publications, 295 |
| Research Division, 277 |
| Upper Division Requirements, 20 |

| Utah Agricultural Experiment Station, 281 |
| Cooperative Extension Service, 289 |
| Cooperative Wildlife Research Unit, 287 |
| Scientific Research Foundation, 285 |

| Vapor Trails, 274 |
| Vegetable Crops, 89 |
| Veterinary Science, Department of, 94 |
| Visitor's Permits, 15 |

| Visual Aids, 26 |
| Arts, 139 |
| Vocal Music, 136, 137 |

| Vocational Counselors, 270 |
| Education (see Agricultural, Home Economics, or Industrial Education) |

| Welding Technology, 189 |
| Welfare Worker, 118 |
| Wildlife Management, Department of, 216 |
| Research Unit, 287 |
| Withdrawal from Class, 14 |
| Woodwork and Building Construction, 181 |

| Yearbook, 274 |
| Zoology, Department of, 61 |

---

*Reputation serves to virtue as light does to a picture.*
Please bring this Catalog with you when you come to register.

Specific Class Schedule Bulletins are available a few days prior to the beginning of each new quarter.

WHEN WRITING TO UTAH STATE UNIVERSITY
concerning any of the following matters, please address letters as follows:

University Policy: President Daryl Chase.

Literature on USU: Director of Information Services, LeRoy A. Blaser.

Requests for Programs, Speakers, Music: Director of Information Services, LeRoy A. Blaser.

Arranging for a Campus Tour or for Use of Campus Facilities: Director of Information Services, LeRoy A. Blaser.


Admission, or Transcript of Credits: Acting Registrar, Asa L. Beecher.

Housing, Scholarships, Costs, or Student Affairs: Dean of Students, J. Elliot Cameron.

Summer School, Off-Campus Classes or Home Study: Director of Summer School and Off-Campus Education, L. G. Noble.

Alumni: Executive Secretary, Alumni Association, LeRoy A. Blaser.

University Business Matters: Business Manager, Dee A. Broadbent.